Storm Water Management Plan
Carnegie State Vehicular Recreation Area

Off-Highway Motor Vehicle Recreation Division

Department of Parks and Recreation

State of California

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APPENDICES

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APPENDIX B: NPDES ANNUAL REPORT FORMS FOR SMALL MS4S

ACRONYMS

AST	Aboveground Storage Tank
ATV	All-Terrain Vehicle
BMP	Best Management Practices
CCC	California Conservation Corps
CDFFP	California Department of Forestry and Fire Protection
CHWA	Corral Hollow Watershed Assessment
CTR	California Toxics Rule
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DPR	Department of Parks and Recreation
HMS	Habitat Monitoring System
LLNL	Lawrence Livermore National Laboratory
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NAHA	North American Hillclimbers Association
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OHMVRD	Off-Highway Motor Vehicle Recreation Division
OHV	Off-Highway Vehicle
PAH	Polycyclic Aromatic Hydrocarbons
RWQCB	Regional Water Quality Control Board
SPPO	State Park Peace Officer
SRI	Stanford Research Institute
SVRA	State Vehicular Recreation Area
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
USACE	U.S. Army Corp of Engineers
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION

Carnegie State Vehicular Recreation Area (SVRA) is operated by the Off-Highway Motor Vehicle Recreation Division (OHMVRD) of the California Department of Parks and Recreation (DPR). The park is located along Corral Hollow Road, between the cities of Livermore and Tracy, California (Figure 1-1). The SVRA is a unit of the California State Park System that provides approximately 1,500 acres of off-highway vehicle riding opportunities to the general public. The park was purchased by the State in 1979 to continue providing existing off highway vehicle (OHV) recreation previously provided by a private motorcycle park. With a diversity of terrain ranging from rolling hills to steep canyons, Carnegie has become a popular destination for off-road enthusiasts of all skill levels.

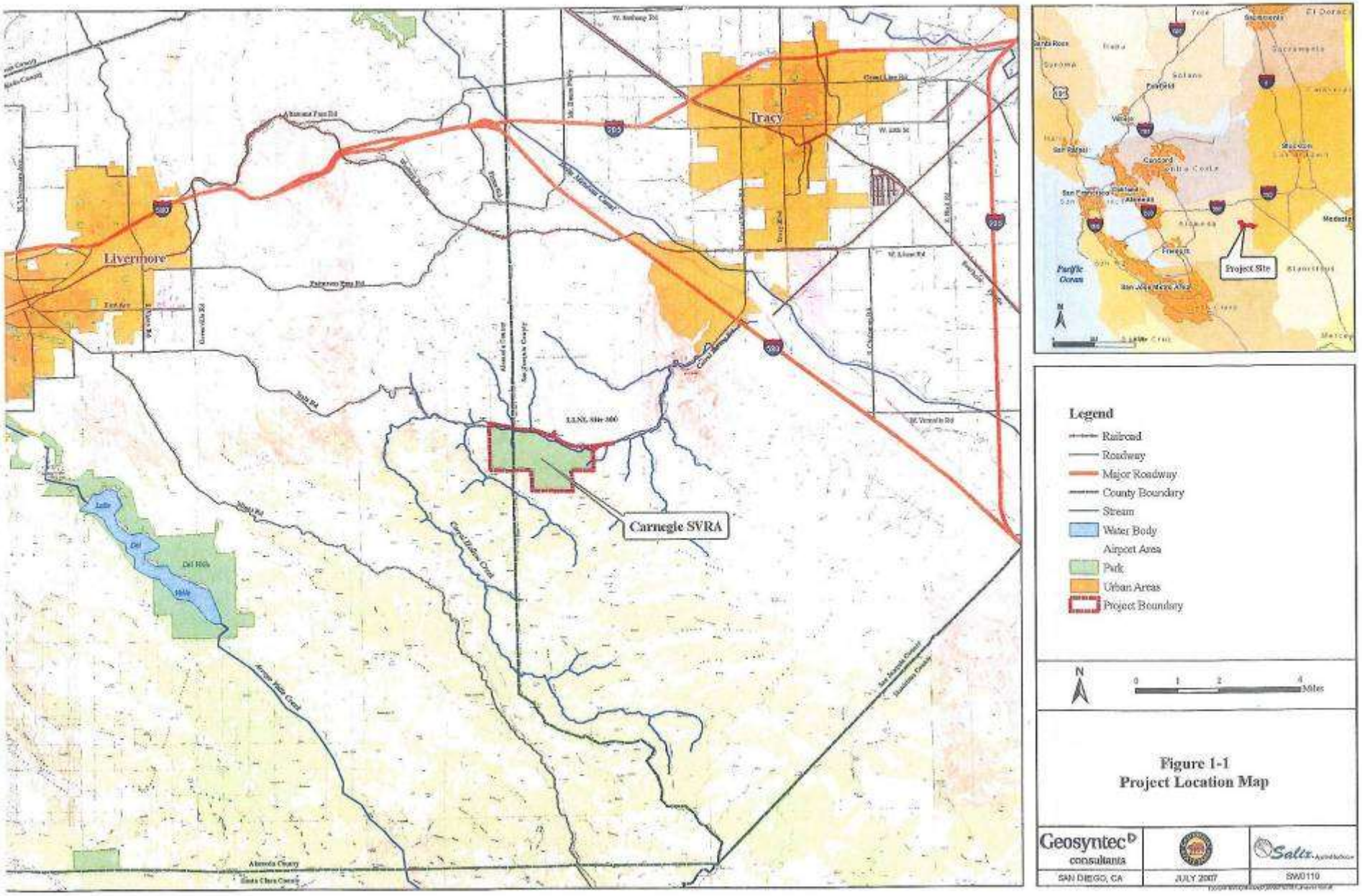
The OHMVRD has initiated an aggressive storm water management program at Carnegie SVRA in an effort to protect the park's natural resources, improve water quality and to meet the requirements of the National Pollution Discharge Elimination System (NPDES) and the Clean Water Act (CWA). In order to achieve these water quality objectives, a number of projects and programs have been planned and/or are being implemented. In the spring of 2004 the OHMVRD contracted with Salix Applied Earthcare and Geosyntec consultants to conduct an assessment of the Corral Hollow watershed. The purpose of the Corral Hollow Watershed Assessment (CHWA), which was finalized in 2007, was to provide the OHMVRD, Carnegie staff, and community stakeholders with an understanding of the historical occurrences that have shaped the watershed, as well as define the current state of the watershed in order to develop future management practices that can be implemented to improve water quality and the health of the watershed. The findings from the watershed assessment were used to develop a number of recommendations designed to reduce erosion and sediment issues through innovative best management practices (BMPs) and an active adaptive management framework focused on meeting water quality objectives. This framework includes continual assessment of erosion and sediment generators, implementation of appropriate BMPs, on-going monitoring and evaluation of these actions and plans for long-term maintenance to ensure the success of these actions. Other components of the OHMVRD storm water management program include the ongoing development and implementation of the Trails Management Plan, the implementation, monitoring and maintenance of projects associated with the OHMVRD Soil Conservation Standard and Guidelines, implementation of annual species surveys and habitat restoration activities related to the Habitat Monitoring System program and use of the OHV-specific BMP manual for selecting, implementing and maintaining appropriate BMPs. These components are discussed in greater detail in Section 6.7

The next phase of the OHMVRD storm water management program includes the development and implementation of a Storm Water Management Plan (SWMP). The purpose of this SWMP is to reduce or eliminate pollutant discharges from Carnegie SVRA through the use of site-specific structural and non-structural BMPs in order to protect and improve water quality while providing high quality OHV recreational opportunities. Elements of the SWMP include public education and outreach, public involvement and participation, illicit discharge detection and elimination, construction site storm water management, post-construction storm water management and pollution prevention/good housekeeping. This SWMP also includes an OHV element dedicated to discussing management goals and activities for maintaining OHV trails and facilities as they relate to meeting our water quality objectives.

This SWMP is designed to meet the requirements set forth in the California State Water Resources Control Board's (SWRCB) Water Quality Order No. 2003-0005-DWQ, General Permit No. CAS000004, NPDES Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Water Systems, (General Permit) adopted on April 30, 2003. As described in more detail in Section 3 of this SWMP, Phase II of the Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s) and construction sites disturbing between 1 and 5 acres of land. An MS4 is defined by the EPA as a "conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) owned or operated by a state, city, town, borough, or county." The MS4 permits require the discharger to develop and implement a SWMP with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP).

Carnegie SVRA is committed to responsible land management, recreation, and meeting our water quality objectives. This SWMP provides an outline for and implementation of Phase II compliance using our OHV adaptive management framework (Figure 1-2). Elements of this SWMP are currently being successfully implemented or will be phased in and implemented over a 5 year period. Specific projects will be implemented as funding becomes available. OHMVRD and SVRA staff, including the District Services Manager, Environmental Scientist, Archaeologist, Maintenance Supervisor, Park Maintenance Worker 1, Park Interpreter and Civil Engineering Geologist will be responsible for implementing this SWMP and submitting the Annual Report.

Figure 0-1: Project Location Map



2 SITE DESCRIPTION

2.1 Watershed Characteristics

Carnegie SVRA is located within the Corral Hollow watershed. The watershed is classified as dendritic, with small headwater tributaries converging in the upper portions of the watershed to form the main stem of Corral Hollow Creek. The creek often infiltrates within the western reaches of the San Joaquin Valley and can have no surface connection to the San Joaquin River until large storm events are present. Approximately 43.6 mi^2 (27,920 acres) of the Corral Hollow Creek watershed is within, and tributary to, the 1,500 acre Carnegie SVRA. The outlet of the watershed is located on the eastern park boundary, downstream of the park. The watershed is flanked by the Arroyo Mocho watershed to the west, Lone Tree watershed to the south, Deep Gulch Creek watershed to the east, and a small unnamed sub-watershed of the San Joaquin River to the north.

The Corral Hollow watershed lies within the Central California Coast Ranges Ecological Section. Vegetation in the watershed includes native and non-native grasslands, oak woodlands and chaparral. The predominant habitat types include California Annual Grassland, Diablan Sage Scrub, Desert Olive Scrub, Choke Cherry Scrub, Blue Oak Woodland/Blue Oak Savanna, Valley Oak/Coast Live Oak Savanna, California Juniper Woodland, Riparian Scrub, and Riparian Woodland. These unique and diverse habitats host a variety of common and special-status species of vegetation, mammals, birds, amphibians, reptiles, and insects. Many of these species are frequently sighted by park patrons, staff, and neighboring residents.

2.2 Climate

Carnegie SVRA is located in the eastern foothills (also known as the Altamont Hills) of the California Coast Range, which separates the Livermore Valley to the west from the San Joaquin Valley to the east. The region is within the Mediterranean subtropical climate zone. The climate is generally characterized as mild-to-hot dry summers and mild, wet winters. The dry summer weather results from a semi-permanent subtropical high-pressure system that forces eastward-moving storms well north of California and blocks them from entering the San Joaquin Valley. However, northward surges of tropical moisture occasionally cause summer showers and thunderstorms. During the winter months, the high-pressure system recedes to the south, which allows for the transport of the moisture-laden westerly systems into the valley (Bowen, 2006).

The upper elevations of the region receive a larger amount of rainfall than lower elevations. As southwesterly winds are forced over the ridge tops, the air temperature decreases which consequently increases condensation and precipitation. As the storm system descends down the northeastern-facing slopes, the air temperature increases and dries out, thus creating a “rain shadow”. Because of this, precipitation is also greater on the windward slopes than the downwind slopes (Bowen, 2006).

Dense fog may result during winter months due to overnight radiational cooling when the soils are wet, the skies are clear, and winds are light. The fog can persist for days within the San Joaquin Valley and can spill westward through the Altamont Hills. Advection fog from the Pacific Ocean is occasionally transported to the project site during the summer months. Snowfall, hurricanes, and tornados are extremely rare and are not considered to be a climatic feature of the region (Bowen, 2006).

2.3 Land Use Activities

2.3.1 Off-Highway Vehicle (OHV) Activities

The park is divided into designated trail areas, open riding areas and specified facilities use areas. The park includes a motocross track, an all-terrain vehicle (ATV) and motorcycle track, a 4X4 area, a beginners track (restricted to vehicles with engineers smaller than 110 cubic centimeters), and a children’s track (restricted to vehicles with engines smaller than 70 cubic centimeters). The park offers

twenty-two camp sites with ramadas, fire rings and restrooms. A number of picnic areas are also available throughout the park.

Carnegie SVRA is home to a number of popular competition events, including two professional hill climbing events, two amateur hill climbing events, and a cross-country race that utilizes most of the road and trail system. Professional events can attract up to 5,000 spectators.

In 2003, the park received approximately 144,000 visitors. Park attendance is highest from late fall through early spring. From November through April of 2003, attendance ranged from 1,400 to 2,000 people per day on the weekend and from 100 to 300 people per day during the week. During the summer months, approximately 150 people visit the park each weekend day while an average of 70 riders visit the park each week day (HDR, 2004). In more recent years, park attendance has decreased to approximately 95,600 visitors in 2007 and 92,000 visitors in 2008.

2.3.2 Transportation Infrastructure

A number of private driveways and access roads are located throughout the Corral Hollow Watershed and are associated with the land uses described above. Within the Corral Hollow watershed the main arterial road is County Road J2 (a.k.a. Tesla Road and Corral Hollow Road). Within the lowlands of the watershed, County Road J2 runs parallel to the Creek and adjacent to the northern boundary of the SVRA. Depending on the super elevation of the road (e.g., which way the road is tilting) drainage directly discharges to the Creek via overland flow or is conveyed to earthen ditches via overland flow and discharges to the Creek via cross culverts. As County Road J2 proceeds west and northwest the roadway rapidly gains elevation within Bakers Ravine, crosses the ridge line and continues west to Livermore. County Road J2 serves as a major commute corridor connecting the San Joaquin Valley to the Livermore Valley and Bay Area.

2.3.3 Grazing

The OHMVRD has authorized neighboring ranchers to use the (DPR owned) Tesla and Alameda properties located to the west of the park for cattle grazing. Generally, steers are grazed in the Tesla property and cow/calf pairs are grazed on the Alameda property. The upper portions of the Corral Hollow watershed are also grazed by cow/calf pairs. No grazing activities are allowed within Carnegie SVRA.

Within the headwaters of the Corral Hollow watershed, grazing of primarily cow/calf pairs is maintained on private ranches. Within the northern tributary, Bakers Ravine, private ranchers also graze cow/calf pairs as well as goats and horses. As demonstrated by the reduced vegetative cover within the watershed, the privately owned lands are heavily grazed in comparison to the OHMVRD managed lands.

2.3.4 Residential Areas

There is a small residential area located along Corral Hollow Creek between Carnegie SVRA and the adjacent Alameda property. The residential development is categorized as rural, low-density, single-family dwellings connected to small horse and cattle pastures. The DPR owns a number of single family residential dwellings near Carnegie SVRA that serve as homes for the rangers and maintenance personnel. The few houses that are located in the upper portion of the Corral Hollow watershed belong to private ranches.

2.3.5 Lawrence Livermore National Laboratory (LLNL)

LLNL is a full-service research laboratory involved in the research and development of science and technology associated with national security. The laboratory is largely self-sustaining and includes engineering, maintenance, waste management, security, environmental protection, fire, health and

safety, and medical departments to serve its 8000 employees. LLNL is operated and managed by the University of California for the U. S. Department of Energy (USDOE) (LLNL, 2005).

LLNL is comprised of the Livermore site, which is located in Livermore, CA, and the Experimental Test Site (Site 300) located nearer to Tracy. Site 300 straddles the Alameda and San Joaquin County line and forms the northeast border of Carnegie SVRA (along the northern side of Corral Hollow Road).

LLNL is required to perform a number of environmental-related monitoring studies to ensure that discharges from the site meet all applicable local, state, and federal regulations. These monitoring programs include, but are not limited to, water quality monitoring within Corral Hollow Creek and other surface water bodies, groundwater monitoring, terrestrial monitoring (including vegetation and wildlife surveys), air quality monitoring, and soil quality monitoring. The results from the monitoring studies are presented in an Annual Report generated by the environment division of LLNL (LLNL, 2005). Due to the close proximity of LLNL (Site 300 in particular where some of the sampling locations are on SVRA property), the Annual Report provides valuable information regarding the ecological health of the areas within and immediately adjacent to Carnegie SVRA.

A portion of Site 300 contributes flows to Corral Hollow Creek. This area is of particular concern since it can influence the water quality of the creek within the Carnegie SVRA. Therefore, management strategies that are practiced by LLNL, such as controlled burns for vegetation management, can impact the ecological health of Carnegie SVRA.

2.3.6 SRI International

SRI International, which was originally part of the Stanford Research Institute (SRI), is an independent, nonprofit research institute that conducts client-sponsored research and development projects for government agencies, commercial businesses, foundations, and other organizations. The institute operates an explosives testing facility that is located southeast of Carnegie SVRA. The facility is accessed by SRI Road, a paved road that runs through the active riding area of the park. The road starts at an access gate off Corral Hollow Road, proceeds through the SVRA and climbs up the ridge along the eastern boundary of the Kiln Canyon sub-watershed. The road is the primary access route to the testing facility as well as a privately owned ranch property. Since the road traverses an active riding area, it is gated and fenced off and is not accessible to OHV riding.

2.3.7 Hetch Hetchy

The Hetch Hetchy project was undertaken to provide water to San Francisco and the surrounding Bay Area. The project involved damming the Hetch Hetchy valley, building a canal to convey the water across the San Joaquin valley, and constructing the Coast Range Tunnel. The tunnel was pushed through the Coast Range and into the upper reaches of Mitchell Ravine, a southern tributary to Corral Hollow Creek. The Mitchell shaft, located west of the SVRA, serves as an access point for the primary tunnel. A portion of the material excavated from the shaft during construction was transported by rail down the ravine to the gravel plant in the lower reaches of Corral Hollow. However, a large volume of the blue-grey shaft tailings remain onsite and continue to deposit material to Corral Hollow Creek, which then enters the SVRA and has continued to accumulate within the park. Severe aggradation of the creek bed has occurred due to this overwhelming bed load and can be seen through out the entire length of the SVRA. Hetch Hetchy Water and Power (HHWP), a department of the San Francisco Public Utilities Commission (SFPUC) owns and manages the shaft and properties within Mitchell Ravine. The OHMVRD is working with SFPUC and other regulatory agencies to remediate impacts from these past construction activities.

2.3.8 Mining Activities and Carnegie Brick and Pottery Works

Among the many mining, industrial, and transportation operations that were established throughout history in Corral Hollow, there exist a handful of historically significant operations that once occurred

within the valley floor of what is now Carnegie SVRA and have played a significant role in shaping the watershed.

In 1895, the San Francisco and San Joaquin Coal Mining Company (also known as Tesla Mine, located west of the existing SVRA) was established by the Treadwell brothers, who constructed an extensive mining operation that included the extraction of clay, coal, sand, and manganese, as well as additional business ventures that consisted of industrial brick, pottery, and coal operations, lime kilns, gravel quarries, town sites, and transportation networks. In an effort to efficiently transport materials mined from the Tesla Mine, the Alameda and San Joaquin Railroad was constructed. The Alameda and San Joaquin Railroad evolved into an important transportation corridor that was successful in carrying coal and other products from the Tesla Mine and additional canyon factories eastbound along Corral Hollow Creek to Stockton. With their great success in mining coal, the Treadwell brothers later focused their attention on mining clay beds in 1901 and eventually established the Carnegie Brick and Pottery Company in 1902 located in the valley floor of what is now the SVRA. The Company consisted of an elaborate industrial operation that included brick kilns, a grinding and pug mill plant, a brick-cutting plant, and drying sheds all of which contributed to the production of thousands of bricks and pottery per day. Many of the original bricks and pottery manufactured at the Carnegie Brick and Pottery Company presently exist among buildings and structures throughout the state and the nation. The operation also included a town, Carnegie, named after the industrialist and philanthropist Andrew Carnegie. Carnegie grew into a large community complete with bunkhouses, a hotel, a school building, saloon, and several homes. The last notable historic-era industrial venture that once operated in today's Carnegie SVRA is the Carnegie Gravel Plant which excavated over 122,000 tons of gravel from the valley floor to build roads and provide aggregate material.

As is common in the Corral Hollow watershed, a massive flood in 1909 scoured Corral Hollow, taking out the railroad, followed by a larger flood in 1911 which destroyed the factory buildings, bridges, repaired rail line, trestles, wagon road and numerous home sites. Today, portions of these mining era remnants remain, including abandoned mines, sections of roads, building ruins and tailing piles. These important historic resources are protected from public access; however, they are located near or within the ordinary high water mark of Corral Hollow Creek. The extent to which these previous land uses and resources continue to impact and impair water quality is difficult to gauge.

3 REGULATORY BACKGROUND

In 1972 the Federal Water Pollution Control Act (later referred to as the Clean Water Act [CWA]) was amended to require an NPDES permit for the discharge of pollutants from any point source to waters of the United States. In 1987 the CWA was further amended to designate the United States Environmental Protection Agency (USEPA) as the regulating authority for permitting storm water discharges under the NPDES permit program.

The USEPA promulgated Phase I of the NPDES permit program on November 16, 1990. Phase I required NPDES permit coverage for all "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 people or greater. Permit coverage was also required for construction activities disturbing five or more acres of land and ten categories of industrial activities.

On December 8, 1999, the USPEA established Phase II of the NPDES permit program. Phase II expanded the Phase I program by requiring permit coverage for "small" MS4s not previously covered under Phase I. The Phase II program also required permit coverage for construction sites disturbing between one and five acres of land.

The USEPA allows two permitting options for storm water discharges covered under the Phase II program: individual permits and general permits. In order to efficiently regulate the numerous small MS4s in California, the State Water Resources Control Board (SWRCB) has adopted a statewide general permit (herein referred to as General Permit). A copy of the General Permit is provided in Appendix A. However, the SWRCB may require the operator of any small MS4 to obtain coverage under an individual permit, a region-specific permit, or an existing Phase I permit.

The General Permit regulates discharges of storm water from "regulated small MS4s". A "regulated small MS4" is a small MS4 that discharges to a water of the U.S. or to another MS4 regulated by an NPDES Permit, and which is designated in one of the following ways:

- Automatically designated by the USEPA because it lies within an urbanized area as defined by the Bureau of Census
- Automatically designated by the SWRCB or the Regional Water Quality Control Board (RWQCB) because it has a population density of 1,000 residents per square mile
- Automatically designated by the SWRCB or the RWQCB because the area grew by more than 25 percent between 1990 and 2000 or is expected to grow by more than 25 percent over the next 10 years
- Designated as a significant contributor of pollutants to an interconnected permitted MS4
- Designated as a significant contributor of pollutants to waters of the U.S.
- Discharges to a sensitive water body

"Non-traditional small MS4s" may also be required to obtain coverage under the General Permit. A "non-traditional small MS4" consists of a storm water system serving public campuses, municipalities, military bases, prisons, or hospitals that are located within or discharge to a permitted MS4, or which pose a significant threat to the receiving water quality. The SWRCB and the RWQCB have not officially designated any MS4s as "non-traditional". However, the SWRCB has developed an extensive list of operators that may be designated at any time. It is the position of the OHMVRD that Carnegie SVRA fits within the non-traditional small MS4 program and is developing a storm water management

program that meets the requirements of the General Permit. This proactive approach to storm water management will ensure that the OHMVRD is protecting and improving the quality of the receiving waters at Carnegie SVRA.

4 DEVELOPMENT AND IMPLEMENTATION OF THE SWMP

In order to obtain coverage under the General Permit, operators of "regulated small MS4s" and "non-traditional small MS4s" must first file a Notice of Intent (NOI) with the RWQCB. A SWMP must also be developed and submitted with the NOI.

The purpose of this SWMP is to reduce or eliminate pollutant discharges from Carnegie SVRA to the Maximum Extent Practicable (MEP). The SWMP achieves this by providing a description of the BMPs that are currently being used or that have been proposed for storm water management at the park. The General Permit requires a description of BMPs for each of the following six program areas (also referred to as Minimum Control Measures). This SWMP also contains a seventh program area related specifically to OHV management:

- Public Education
- Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post Construction Storm Water Management
- Pollution Prevention/Good Housekeeping
- OHV Trails and Facilities Management

In order to monitor the effectiveness of the BMPs, the SWMP includes a series of measurable goals established for each Minimum Control Measure. Measurable goals are intended to gauge compliance with the General Permit as well as the effectiveness of the SWMP. They are specifically selected for each BMP and take into account the site conditions, climate, and land use activities. Examples of measurable goals include the construction of a sediment basin, the implementation of a public awareness program, or the continued use of a properly installed and maintained wheel wash facility. Measurable goals could also include quantifiable assessments of the number of educational brochures distributed, the averaging score on a training quiz, or the number of illicit discharges recorded during the permitting cycle.

The SWMP also includes an implementation schedule for each BMP. The implementation schedule generally follows the five-year permitting cycle. For example, the SWMP might indicate that a sediment pond will be installed by the end of Year 1 and that routine maintenance of the basin will occur in Years 2, 3, 4, and 5. The implementation schedule (i.e. Year 1) will start the year following the adoption of the SWMP.

5 POLLUTANTS OF CONCERN

Pollutants of concern consist of any pollutants that could potentially be stored or generated onsite and that could have an adverse impact on the quality of the receiving waters. The pollutants of concern for Carnegie SVRA were selected based on applicable water quality regulations and potential activities that could act as sources of pollutants. The purpose of the SWMP is to prescribe BMPs that will reduce or remove the pollutants of concern to the maximum extent practicable.

5.1 Selection Criteria

Pollutants of concern include any pollutants that could potentially be generated by past, present, and future land use activities. This includes historic activities such as mining that may have created a perpetual source of pollutants (i.e. tailing piles), present activities such as OHV use, and planned future activities that could create a new source of pollutants.

The Water Quality Control Plan (Basin Plan) for the Central Valley Region sets forth water quality standards for the surface and ground waters of the region, which include both designated beneficial uses of the water and the narrative and numeric objectives that must be maintained or attained to protect those uses. The Basin Plan does not specify beneficial uses or specific water quality objectives for Corral Hollow Creek. According to the tributary rule, the beneficial uses assigned to any downstream water body would also apply to the creek. However, the flows in the creek completely infiltrate in the Central Valley before discharging to any other surface water bodies. Thus, no downstream water bodies are directly impacted by Corral Hollow Creek. The Basin Plan does specify general water quality objectives for all water bodies within the Sacramento and San Joaquin River Basin. These objectives include numeric and narrative standards designed to preserve the quality of the receiving waters.

When selecting the pollutants of concern, the past, present, and planned future activities at Carnegie SVRA were evaluated to identify potential pollutant sources. Once the sources had been identified, the typical pollutants associated with each source were then compared to regulatory criteria to select the pollutants of concern for Corral Hollow Creek and its tributaries.

5.2 Selected Pollutants of Concern

Based on the potential pollutant sources at Carnegie SVRA and water quality objectives presented in the Basin Plan, the following constituents were selected as pollutants of concern:

- Sediment
- Heavy Metals
- Nutrients
- Pathogens
- Petroleum Hydrocarbons
- Trash and Debris

The following sections provide a description of the potential sources and hazards of each pollutant of concern.

5.2.1 Sediments

Sediments include total suspended solids (TSS), total dissolved solids (TDS), and bed load material. Erosion, transport, and deposition of sediment in surface waters has proven to be a significant form of pollution resulting in water quality problems, which have impaired riparian habitat by inundating riparian vegetation, and reducing beneficial habitat structure in stream channels. Sources of sediment include deposition of materials from Mitchells Ravine and the adjacent County Road, earth disturbance by OHV activities, low volume (access) roads, wind and water erosion, and construction and maintenance activities. Sediments are associated with the following pollutant categories provided in the Basin Plan: Sediment, Suspended Sediment, Settleable Sediment and Turbidity.

5.2.2 Heavy Metals

Recent water quality sampling conducted by Geosyntec (OHMVRD, 2007) revealed the heavy metal concentrations were generally low and only exceed the California Toxics Rule (CTR) criteria for copper in one sample. However, metals such as copper, zinc, and chromium have been selected as pollutants of concern since they are prevalent in OHV components and can be deposited in the watershed through typical vehicle wear and leaks. Additional sources of metals include fuels, adhesives, paints and other coatings, buildings, infrastructure, and the remnants of tailing piles associated with historic mining activities. Metals are of concern because of their acute and chronic toxic effects on aquatic life and the potential to bioaccumulate in aquatic organisms. Heavy metals are associated with the following pollutant categories provided in the Basin Plan: Taste, Odor and Toxicity.

5.2.3 Nutrients

Nutrients are inorganic forms of nitrogen and phosphorus. The potential sources of nutrients at Carnegie SVRA include decomposition of organic matter, fertilizers from landscaped areas, and atmospheric deposition. Excess nutrients can contribute to surface algal scum and water discoloration. Nutrients are inclusive of the following pollutant categories provided in the Basin Plan: Biostimulatory Substances.

5.2.4 Pathogens

Elevated levels of pathogens are typically caused by the transport of domestic animals, wildlife, or human fecal wastes from the watershed. Even runoff from natural areas can contain pathogens (e.g., from wildlife). At Carnegie SVRA, potential sources of pathogens include domestic pet waste, wildlife waste, cattle and livestock waste, human waste, and leaking septic tanks. If transported to the receiving waters, pathogens can pose a direct health risk to humans. Pathogens are associated with the following pollutant categories provided in the Basin Plan: Bacteria.

5.2.5 Pesticides

Pesticides (including herbicides, insecticides and fungicides) are chemical compounds commonly used to control insects, rodents, plant diseases, and weeds. Excessive application of a pesticide may result in runoff containing toxic levels of its active component. Common types of pesticides include organochlorine pesticides or organophosphorus. However, the use of organophosphorus pesticides, including diazinon and chlorpyrifos, has been restricted by USEPA and are not used by Carnegie SVRA. Herbicides, insecticides, and fungicides are associated with the following pollutant categories provided in the Basin Plan: Pesticides.

5.2.6 Petroleum Hydrocarbons

The potential sources of oil, grease, and other petroleum hydrocarbons at Carnegie SVRA include spills and leaks of fuels and lubricants, atmospheric deposition, wearing of tires, and deposition from vehicle exhaust. Petroleum hydrocarbons, such as polycyclic aromatic hydrocarbons (PAHs), can accumulate in aquatic organisms from contaminated water, sediments, and food and are toxic to aquatic life at low

concentrations. Hydrocarbons can persist in sediments for long periods of time and result in adverse impacts on the diversity and abundance of benthic communities. Hydrocarbons can be measured as total petroleum hydrocarbons (TPH), oil and grease, or as individual groups of hydrocarbons, such as PAHs. Petroleum Hydrocarbons are associated with the following pollutant categories provided in the Basin Plan: Oil, Grease and Floating Materials.

5.2.7 Trash and Debris

Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products deposited by anthropogenic and natural processes. The primary source of trash and debris at Carnegie SVRA is deposition by park visitors. The presence of trash and debris may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower the water quality. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide. Trash and Debris are associated with the following categories provided in the Basin Plan: Dissolved Oxygen, Floating Materials, Taste and Odor.

6 MINIMUM CONTROL MEASURES

The General Permit identifies six minimum control measures that must be included in the SWMP. Each minimum control measure includes a number of requirements that must be met to comply with the General Permit. The following sections provide a description of the BMPs, measurable goals, monitoring and implementation schedules that have been proposed to meet the requirements of each minimum control measure. In addition to the required six minimum control measures, this SWMP includes a seventh vital control measure for implementation of BMPs associated with OHV trails and facilities management.

6.1 Public Education and Outreach

Public education and outreach is needed for effective implementation of the SWMP to ensure water quality objectives are met. Public education and outreach will promote greater support for the projects, BMPs and actions undertaken by management to protect water quality and the sustainability our OHV facilities. The public education and outreach program will provide information and resources to our park visitors and stakeholders that will improve each person's understanding of the SWMP and effectively inform people about the importance of protecting and improving water quality by recreating responsibly. Public education and outreach promote better compliance with other minimum control measures by teaching individuals about the responsibilities expected of them and others in the community, including individual actions they can take to protect or improve their environment.

To meet the minimum requirements for public education and outreach, the USEPA encourages operators to use educational materials, such as brochures, fact sheets, guides, signage, educational programs, and seminars to address the viewpoints and concerns of all members of the public. The USEPA has developed an extensive database of public education and outreach materials that can be used at Carnegie SVRA. Whenever appropriate, the OHMVRD will work with other governmental agencies, as well as utilize these materials as they are peer-reviewed documents that target specific storm water management issues. The materials can be found on the USEPA's website: http://cfpub.epa.gov/npdes/stormwatermonth.cfm

6.1.1 Minimum Requirements

The minimum requirements for Public Education and Outreach as described in the General Permit are as follows:

- Identify, develop, and implement the appropriate BMPs and measurable goals for improving water quality through public education and outreach actions.
- Implement a public education program to distribute educational materials to the community, and conduct outreach activities to inform the public of the impacts of storm water discharges on water bodies and the steps that can be taken to reduce pollutants in storm water runoff.
- Evaluate the effectiveness of the public education and outreach programs and materials by developing and distributing quizzes or questionnaires.
- Adapt educational material and outreach activities that best communicate with all members of the community the importance of protecting and improving water quality.

6.1.2 Meeting the Minimum Requirements

The following sections provide a description of the BMPs that have been proposed by the OHMVRD to meet the minimum requirements of Public Education and Outreach actions to protect and improve water quality. Many of the BMPs listed are currently being implemented while the new BMPs will be developed and supplement the existing BMPs. The measurable goals, monitoring, evaluation and implementation schedules for each BMP are summarized in Table 6.1.

6.1.2.1 Educational Brochures

The OHMVRD will generate a brochure or series of brochures (or modify an existing brochure or fact sheet from another agency) to educate Carnegie staff, park visitors, contractors and subcontractors, neighbors, and other community members on the potential sources of pollutants in the park and the detrimental impact of those pollutants to the area's wildlife, water quality, and public health. These brochures will identify ways to prevent pollutants from being transported to Corral Hollow Creek and its tributaries through storm water runoff. The brochures will also stress the need to comply with the General Permit requirements in order to keep the park open for future generations. Any educational brochures generated by the OHMVRD will be available in a variety of formats, possibly including other languages and posted on the Carnegie web site. At least one brochure will be distributed to each vehicle that enters the park. Brochures will also be distributed to all Carnegie staff, contractors, and subcontractors.

Measurable Goals and Monitoring- The measurable goals will include the development and distribution of the brochure. Also, Carnegie staff working at the park entrance kiosk will keep track of the number of brochures distributed to park visitors. All new and existing staff at Carnegie will be required to sign a certification sheet stating that they have read the brochure. Prior to conducting earth-disturbing work at Carnegie SVRA, contractors and subcontractors will also be required to sign a certification sheet stating that they have read the brochure. The signed certification forms will be kept in the sector office at Carnegie SVRA. If practicable, the OHMVRD will attempt to track the number of brochures downloaded from the website using web tracking tools. The effectiveness of the brochure will be evaluated annually through verbal surveys or written questionnaires given to brochure recipients to ensure the information is clear and easily understandable.

Implementation Schedule- The brochure and certification sheet will be developed by the end of Year 1. The brochure will also be posted to the Carnegie SVRA website by the end of Year 1. Each existing Carnegie staff member will read the brochure and sign the certification sheet by the end of Year 2. All contractors and subcontractors that are currently conducting work in the park will be required to read the brochure and sign the certification sheet by Year 2, unless the earth-disturbing activities will be completed by then. Carnegie staff will also begin distributing the brochure by the end of Year 2. The brochures will be updated as needed and distributed to new staff, contractors, and visitors on an ongoing basis.

6.1.2.2 Interpretive Panels and Informational Signs

The OHMVRD currently provides interpretive panels to further visitors' understanding of the environmental needs of the park. Examples of panels used in current education campaigns include SRI Loop rehabilitation, the realignment project at Bunkhouse Trail, the August 2009 fire and closure, and panels on park history.

As an example, the panel on the 2009 fire not only tells the story of the fire and the coordination of multiple agencies to put it out, it also outlines the process the land will take to recover, the rehabilitation efforts of park staff, and the importance of visitors staying out of the burned area to aid in recovery. An existing panel also informs visitors of the legal consequences of not complying with closures, which supports the ability of our law enforcement staff to write citations.

OHMVRD will generate a number of new interpretive panels designed to promote public awareness of the SWMP at specific locations in the park. Three different types of panels will be created: 1) panels addressing the prevention of pollution, 2) a series of panels that inform the public of the ecological diversity and sensitivity of the park, and 3) panels to share information with visitors about upcoming and ongoing rehabilitation work in the park. The goal of the pollution prevention panels is to provide visitors with information on how to identify pollutants, such as leaking equipment or garbage around their campsite and ways to prevent these pollutants from contacting storm water runoff, such as how to use, store and discard absorbent materials or to place garbage and recyclables in the appropriate receptacles.

The series of ecological diversity panels will include information on each habitat type that is present in the park. Each panel will identify resident species of wildlife and vegetation found within that habitat. Special status species (i.e. threatened, endangered, and species of concern) that have been observed in the area will also be highlighted on the panels. One of the primary goals of these panels is to provide a brief synopsis of how park activities can generate pollutants that can be transported to these habitats via storm water runoff and the associated negative impacts on the habitat.

The primary goal of the third type of panel is to identify park wide rehabilitation work, why the rehabilitation work is necessary, how the rehabilitation work will help the environment, and what the public can do to support the efforts. The boards will also identify the BMPs that will be implemented and an estimated time for area closure if necessary.

Carnegie SVRA currently provides signs relaying information to riders regarding required safety gear, directional signage throughout the park and trail markings.

Informational signs in support of the SWMP will be placed in the parking/staging areas and near the park entrance kiosk. Signs will alert riders to the closed areas, the prohibition against making new trails, and the consequences for violating these rules.

The information on these panels and signs will be easily visible and comprehensible to the general public. The panels and signs will be posted in areas that are accessible to the majority of the park visitors, including the disabled. The panels will not be a hazard to riders.

Interpretive Panels and Informational Signs will also include the following statement: California State Parks does not discriminate against individuals with disabilities. Interpretive panels and publications in an alternate format are available by contacting the Carnegie sector office at (925) 447-0426.

Measurable Goals and Monitoring- The measurable goals will include the development and posting of the panels and signs. The effectiveness of these signs will be measured by using a visitor survey or quiz to determine if the clarity and content of the message was understood by the visitor. Pending feedback from these surveys, information will be altered to ensure the clarity and content of the message is reaching our target audience. At a minimum, the OHMVRD will develop and post the following panels:

Pollution prevention panels will be located in all main staging areas, the campground and at the entrance kiosk, informing the public about sources of pollution, the ability of this pollution to enter storm water and what visitors should do to prevent the generation and release of these pollutants.

Panels related to wildlife and the various habitats found within the park will be located in high traffic areas that are accessible by the majority of park visitors. Panels will include information on the following habitat types: riparian, annual grassland, oak woodland and coastal sage scrub.

A panel will also be posted at each rehabilitation site once the rehabilitation efforts have begun. A separate temporary board will be posted in a high traffic area and at the entrance kiosk to inform park visitors of upcoming restoration work.

Informational signs will be placed in staging areas and high traffic locations where they will be clearly visible by the majority of park visitors.

Implementation Schedule- A draft of the panels and signs will be completed by the end of Year 1. The OHMVRD staff will identify the posting locations for each panel and sign by the end of Year 1. All panels and signs will be fabricated and posted by the end of Year 2. The panels will be inspected, updated, and maintained at least once per year, but as often as necessary.

6.1.2.3 Educational (Special Event) Booth

Four times per year Carnegie SVRA hosts a two-day hill climbing competition for the North American Hillclimbers Association (NAHA). The competitions are organized by a private promoter and can attract over 5,000 spectators. Carnegie SVRA has also hosted a cross-country race that utilizes most of the parks trail system.

During each of these events, the OHMVRD sets up an educational booth in an area of the park that receives a high volume of foot traffic. Each day the booth contacts approximately 150 visitors. The focus of the booth to date has been local wildlife and good environmental practices. Most of the visitor contacts have been children and families.

With implementation of the SWMP the booth will provide written and verbal information that describes how typical park activities (day-to-day rider activities) can generate pollutants that can impact the wildlife, water quality, and habitat value of the park. The booth will also provide information on how these impacts can be compounded during large scale events and how visitors can lessen their impact. The OHMVRD will emphasis the controls they currently utilize to minimize these impacts and the measures taken to rehabilitate any impacted areas after the events.

The educational booth will reiterate the information provided on the interpretive panels and informational signage. The educational brochures discussed above will also be available at the booth. If desirable, the OHMVRD could solicit volunteers or citizens groups to work the booth. At a minimum, the booth will include one individual that has a general knowledge of the park and is capable of answering general questions on storm water runoff, pollutants sources, and associated impacts. The information presented in the educational booth will be easily visible and comprehensible by the general public. The booth will be assembled in an area that is easily accessible to the majority of the park visitors, including the disabled.

Measurable Goals and Monitoring- The measurable goals will include usage of the booth. Park visitors will be surveyed (verbal and/or written) regarding the information we provide on protecting and improving water quality, including the importance of BMPs, trail maintenance and restoration activities to ensure the material is clear and informative. Informational materials and presentations will then be evaluated and adapted to best meet our education and outreach objectives. At a minimum, the OHMVRD will use the booth at all of the park's special events.

Implementation Schedule- The educational booth will continue to be in use throughout the implementation of the SWMP. The booth will be used at all rider events at Carnegie SVRA (attracting at least 2000 visitors) starting in Year 3. The material presented at the booth will be updated at least once per year, but as often as necessary.

6.1.2.4 Information Station

Starting in 2010, an information station (interpretive booth) has been open in the park regularly to answer visitor questions and provide written and verbal information about wildlife, water quality and environmental concerns, and recreational opportunities. The information station also provides educational tools such as a youth activity book, taxidermy, historic and cultural artifacts and park maps. In the future the booth will also address pollutants of concern and their effect on water quality and park resources. Written materials about pollution and water quality will be available. A possible self-guided

written activity for children which includes a reward for completion may be developed. Most of the same materials available at the special event booth will be available here.

Measurable Goals and Monitoring- The measureable goals will include the usage of the information station. Park visitors will be surveyed (verbal and/or written) regarding the information we provide on protecting and improving water quality, including the importance of BMPs, trail maintenance and restoration activities to ensure the material is clear and informative. Informational materials and presentations will then be evaluated and adapted to best meet our education and outreach objectives. At a minimum the station will be open one day per month.

Implementation Schedule- The information station will continue to be used, incorporating new materials and information related to the SWMP throughout years 1 and 2. The material presented at the booth will be updated at least once per year, but as often as necessary.

6.1.2.5 Law Enforcement

Carnegie SVRA has an active law enforcement based resource protection program in place. This program includes full time State Park Peace Officers (SPPOs) who actively patrol the park using motorcycles, ATVs and four-wheel drive vehicles. The SPPOs have the authority to enforce all provisions of the Public Resources Code and the California Vehicle Code, including protection of natural and cultural resources, vehicle violations and health and safety codes.

Carnegie SPPOs have a wide range of options available to them when dealing with violations related to the protection of natural resources. These options range from verbal warnings, informational contacts and written warnings to misdemeanor citation and finally arrest. This authority provides the necessary flexibility for officers to inform, educate, and seek voluntary compliance from park users. In addition to handing out and verbally providing information regarding closed areas within the park and staying on designated trails, the officers and staff at the entrance kiosk inform park users of the importance of complying with rules and regulations upon entry to the park. Enforcement actions are conducted at the discretion of the SPPO based upon observable facts at the time of contact. Other enforcement actions may be available in order to gain immediate compliance or provide a form of deterrence and use is subject to the discretion of the agency.

Measurable Goals and Monitoring– The measurable goals will include continued enforcement of all rules and regulations pertaining to the protection of natural resources and storm water management. Assessment of enforcement activities will occur and effectiveness of this management function will be evaluated.

Implementation Schedule– Enforcement will continue with effective verbal and written communication provided to park visitors upon entry into the park.

Table 6-1: Measurable Goals for Public Education and Outreach BMPs

BMP	Year of Implementation	Measurable Goals
Educational Brochures	1	• Generate an educational brochure • Generate a certification sheet for the brochure • Post the brochure on the Carnegie SVRA website
	2	• Existing staff will read the brochure and will sign the certification sheet • Contractors and subcontractors currently conducting work in the park will read the brochure and will sign the certification sheet • Carnegie staff will begin distributing the brochure to park visitors
	3	• Continue to distribute the brochure to park visitors • Continue to distribute the brochure to new staff and contractors • Update the brochure as necessary
	4	
	5	
Interpretive Panels And Informational Signage	1	• Complete a draft of the interpretive panels for wildlife and habitat • Complete a draft of the informational signs • Identify the posting locations for each interpretive panel and sign • Obtain funding and materials for panels and signs
	2	• Post the interpretive panels in their designated locations near the associated habitat type • Post the informational signs in their designated locations • Develop and post interpretive panels for restoration and rehabilitation projects as they arise
	3	• Inspect, update, and maintain each panel and sign • Develop and post interpretive panels for restoration and rehabilitation projects as they arise
	4	
	5	
Educational Booth And Information Station	1	• Continue to provide the Educational Booth and Information Station
	2	• Assemble the booth at the hill climbing events and cross country event • Continue to provide the Information Station
	3	• Assemble the booth at the hill climbing events and cross country event • Assemble the booth at all events that are expected to attract at least 2,000 spectators • Continue to provide the Information Station • Inspect, maintain and update the material in the booths
	4	
	5	
Law Enforcement	1	• Continue enforcement of regulations and laws pertaining to resource protection and water quality • Effective communications with park visitors, both verbal and written • Annual evaluation of law enforcement program effectiveness
	2	
	3	
	4	
	5	

6.2 Public Involvement and Participation

The success of the SWMP is largely dependent on the involvement and support of the community. Stakeholders who participate in the development and decision making processes of the SWMP become partially responsible for deciding what actions should be taken and ensuring success of the program. Furthermore, stakeholders who are involved with the development of the SWMP are more likely to take an active role in its implementation. Public involvement and participation will ensure the SWMP reflects the actions and efforts stakeholders have committed to in support of reducing pollutant discharges, promoting safe and responsible use of park facilities and following all park rules in order to protect and improve water quality.

In addition, individuals that involve themselves in the development of the SWMP can serve as valuable connections to other citizen and government groups in the community. This promotes an intra-community distribution of knowledge and support and can be particularly valuable when implementing a watershed-based approached to storm water management.

To meet the minimum requirements for public participation and outreach, the USEPA encourages operators to include the public in developing, implementing, updating, and reviewing their SWMP. Carnegie SVRA will solicit public participation and involvement from the community and will utilize creative but effective means of advertising. For example, notification of public review for the SWMP will not only be posted in the newspaper, but also on the website, and at the park entrance kiosk. Notification may also be distributed by newsletter, flyers and email. Whichever medium is selected for advertisement, notifications of public involvement and participation will reach all members of the community.

6.2.1 Minimum Requirements

The minimum requirements for Public Involvement and Participation as described in the General Permit are as follows:

- Identify and comply with all applicable State, Tribal, and local public notice requirements
- Identify the community members and stakeholders to be involved with the development of the SWMP
- Develop and implement a public involvement plan and public notification plan to ensure the appropriate measures are taken to meet water quality objectives

6.2.2 Meeting the Minimum Requirements:

The following sections provide a description of the BMPs that have been proposed by the OHMVRD to meet the minimum requirements of Public Involvement and Participation. The proposed BMPs will supplement the existing BMPs. The measurable goals and implementation schedules for each BMP are summarized in Table 6.2.

6.2.2.1 Public Meetings

The OHMVRD will hold a public meeting to present the SWMP to the community, citizen groups, watershed stakeholders, and any other state or federal agencies that wish to attend. The meeting will provide the community and other interested parties with an opportunity to comment on the SWMP. The meeting will also serve to open a dialogue between the OHMVRD and the community. If necessary, the OHMVRD may schedule a second meeting to properly address the concerns and comments of the community. Notice of the public meeting will be made at least one month prior to the meeting. The

OHMVRD will attempt to notify all members of the community using various publication and media formats.

Measurable Goals and Monitoring- The measurable goals will include implementation of the public meetings. The OHMVRD will record the names and contact information of the attendees as well as the meeting minutes. Any comments or responses that are presented to the OHMVRD in hardcopy form will be kept on file in the sector office with the list of attendees and the meeting minutes. The OHMVRD will also administer a brief, one page survey at the end of the meeting to provide feedback on the effectiveness of the meeting and the meeting notification.

Implementation Schedule- The public meeting will be held in Year 1. If a second meeting is required, the meeting will be held by the end of Year 2. The number of attendees and the results of the survey will be compiled and included in the Annual Report by the end of Year 2.

6.2.2.2 Public Interpretive Program

Once the SWMP becomes final, the OHMVRD will develop an interpretive program that will be used to inform the community, citizen groups, watershed stakeholders, park visitors, and state and federal agencies about the development, implementation, and status of the SWMP. The program will identify the regulatory and environmental drivers for the SWMP, the typical park activities that can impact the wildlife, water quality, and habitat value of the park, as well as the components of the SWMP that are being implemented to minimize these impacts. The program will be given at least once per year. Each year, the OHMVRD will amend the program so that they describe the current status of the SWMP. Notice of the program will be made at least one month prior to the presentation. The OHMVRD will attempt to notify all members of the community using various publication and media formats.

Measurable Goals and Monitoring- The measurable goals will include the development and implementation of the interpretive program. The OHMVRD will record the names and contact information of the attendees for each presentation. Any comments or responses that are presented to the OHMVRD in hardcopy form will be kept on file in the sector office with the list of attendees' and the meeting minutes. The OHMVRD will also administer a brief survey to assess the attendee's understanding of the information presented in the interpretive program and to provide feedback on the effectiveness of the program presentation. The program will be updated as needed to ensure the information provided is clear and informative.

Implementation Schedule- A draft of the program will be completed by Year 1. The program will be finalized and presented for the first time by the end of Year 2. The program will be updated and presented each year thereafter. The number of participants and the results of the survey will be compiled and included in the Annual Report by the end of Year 2.

6.2.2.3 Volunteer Led OHV Maintenance Training Program

The OHMVRD will initiate an annual free training session on how to properly fuel and maintain OHVs and equipment. The training session will be led by a group of park volunteers that are familiar with proper fueling and maintenance protocols for OHVs. The training session will also provide techniques for cleaning up spills and leaks and how to properly dispose of used absorbents. The OHMVRD will attempt to notify all members of the community of when and where this free training will occur at least one month prior to the training session. The OHMVRD will actively train its existing park volunteers in pollution prevention so that they can provide on-going training to park visitors whenever necessary, as well as seek additional volunteers to lead training sessions.

The primary purpose of this training session will be to teach park visitors how to minimize leaks and spills of hydrocarbons and other automotive components that can be detrimental to water quality. The training will make park visitors more aware of the sensitive receptors surrounding them while recreating

and will help guide their actions towards good housekeeping and responsible OHV use in an effort to protect and improve water quality.

The volunteer instructors will demonstrate routine maintenance of OHVs including the inspection, tightening and replacement of gaskets, hoses, drain plugs, universal joints, and fluid reservoirs. The instructors will also educate participants on how these components, if not properly maintained or disposed of, can enter storm water and contribute to degraded water quality in Corral Hollow Creek.

Measurable Goals and Monitoring- The measurable goal will include organization and implementation of the training session. The OHMVRD will record the number of participants that attended the session in the Annual Report. The OHMVRD will administer a brief survey to provide feedback on the effectiveness of the training and the notification process for both volunteers and participants. The training program will be evaluated and adapted as needed to ensure the techniques and information are valuable and easy to implement by park visitors.

Implementation Schedule- The development of the program will occur by Year 1. The training of volunteers and the first training session for park visitors will be held in Year 2. At least one training session will be conducted every year thereafter. If a suitable volunteer cannot be found to lead the session, the OHMVRD will provide an instructor. The number of participants and the results of the survey will be compiled and included in the Annual Report by the end of Year 2.

6.2.2.4 Website

The existing Carnegie SVRA website will be updated with a link to the SWMP and will have information on how the public can provide comments on the development, implementation, and updates of the SWMP. The website will also be used to discuss current programs and projects that are related to meeting our water quality objectives.

Measurable Goals and Monitoring- The measurable goals will include the development and implementation of the website link and a section dedicated to providing information related to programs and projects being undertaken to protect and improve water quality. The OHMVRD will monitor the website, any comments received and update the site as necessary to ensure the information posted is easily accessible and informative.

Implementation Schedule- The link to the SWMP and the current programs and projects section will be developed and implemented by the end of Year 1. The website will continue to be updated as necessary.

Table 6-2: Measurable Goals for Public Participation/Involvement BMPs

BMP	Year of Implementation	Measurable Goals
Public Meeting	1	• Public meeting notification • Hold public meeting • Distribute the survey at the end of the meeting
	2	• If necessary, 2nd public meeting notification • If necessary, hold 2nd public meeting • If necessary, distribute the survey at the end of the 2nd meeting • Compile results from the survey(s) and include in the Annual Report • Report the number of attendees for each meeting in the Annual Report
Public Interpretive Program	1	• Develop a draft of the interpretive program
	2	• Finalize the program presentation • Provide presentation on the status of SWMP implementation • Distribute the survey at the end of the presentation • Compile results from the survey and include in the Annual Report • Report the number of attendees in the Annual Report
	3	• Update the presentation • Give annual presentation on the status of SWMP implementation • Distribute the survey at the end of the presentation • Compile results from the survey and include in the Annual Report • Report the number of attendees in the Annual Report
	4	
	5	
Volunteer Lead OHV Maintenance Training Program	1	• Develop a volunteer lead OHV maintenance training program
	2	• Use existing park volunteers and seek a qualified volunteer instructor for the program • Train the volunteers • Organize and implement the training session • Provide a survey at the end of the training session • Record the number of participants and the results of the survey in the Annual Report
	3	• Continue to implement the training sessions • Continue to seek qualified volunteer instructors • Provide a survey at the end of the training session
	4	

BMP	Year of Implementation	Measurable Goals
	5	• Record the number of participants and the results of the survey in the Annual Report • Evaluate and adapt the training program as necessary
Website	1	• Develop a link to the SWMP and a water quality based programs and projects section
	2	• Evaluate and update the website link and programs and projects section as needed
	3	
	4	
	5	

6.3 Illicit Discharge Detection and Elimination

One of the primary objectives of the illicit discharge detection and elimination program is to encourage operators to develop an extensive awareness of their storm sewer system and the potential situations that can result in an illicit discharge. Currently, Carnegie SVRA does not have a storm sewer system to manage storm water runoff from the site. Runoff from the park infiltrates into the subsurface, evaporates, or directly enters Corral Hollow Creek and its tributaries as surface water runoff. A storm drain system is not needed since less than 5 percent of the area is impervious. Furthermore, the majority of impervious area is not directly connected. In addition, not all non-storm water discharges are detrimental to the receiving waters. According to the General Permit, the following categories of non-storm water discharges do not need to be addressed and as such are not addressed in this illicit discharge detection and elimination program provided they are not a significant source of pollutants:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car wash water
- Flows from wetlands
- Dechlorinated pool discharges
- Street wash water

The OHMVRD plans to fully implement an illicit discharge detection and elimination program to prevent surface discharges of contaminated storm water runoff and non-storm water runoff to the receiving waters. Carnegie SVRA maintains facilities and recreational areas that will be identified, monitored and maintained to protect water quality and meet the water quality objectives of this SWMP.

6.3.1 Minimum Requirements

The minimum requirements for Illicit Discharge Detection and Elimination as described in the General Permit are as follows:

- Develop a map of the storm water system that identifies the locations of all outfalls and the names and locations of the waters of the United States that receive discharges from the outfalls
- Prohibit non-storm water discharges to the storm water system through the development of an ordinance or other regulatory mechanism, provided the prohibition abides by all state, tribal, and local laws
- Develop a plan to detect and address non-storm water discharges, including illegal dumping, into the storm water system
- Educate the general public on the hazards associated with improper disposal of waste and illegal discharges
- Identify, develop, and implement the appropriate BMPs and measurable goals to meet the water quality objectives of this SWMP

6.3.2 Meeting the Minimum Requirements

The following sections provide a description of the BMPs that have been proposed by the OHMVRD to meet the minimum requirements of Illicit Discharge Detection and Elimination. The proposed BMPs will supplement the existing BMPs. The measurable goals, monitoring, evaluation and implementation schedules are summarized in Table 6.3.

6.3.2.1 Pollutant Source Mapping

The OHMVRD will generate a map that will show all areas within the project boundary that could reasonably generate an illicit discharge to the receiving water. The map will include the locations of all sediment basins and their outfalls, bathrooms, the ranger station, maintenance yard, trash container, fuel and chemical storage areas, day use staging areas, the campground, motorcycle and ATV track facilities, Corral Hollow Road and any other areas or isolates that could contain harmful pollutants. The map will also identify the topography of the park and delineate drainage areas or areas of concentrated flows. Many of the above listed facility locations are currently featured on our visitor park map (see Map 1) which will be used as the baseline reference for the SWMP.

The pollutant source map will be used by Carnegie SVRA staff to inspect the locations of the park where an illicit discharge would likely occur. By narrowing down the locations of the potential pollutant sources, Carnegie SVRA staff could conduct the illicit discharge detection inspections more efficiently.

Measurable Goals and Monitoring- The measurable goals will include the generation of the pollutant source map. The OHMVRD will monitor and evaluate all components of the map to ensure the information and locations are accurate. The OHMVRD will track updates to the map by including all revision dates on the map.

Implementation Schedule- The map will be completed by the end of Year 1. The OHMVRD will inspect and update the map at least once per year, but as often as necessary to ensure all potential locations of illicit discharges have been identified and are being inspected.

6.3.2.2 Notification Signage

The OHMVRD will generate signs instructing park visitors to contact the ranger station if they observe an illicit discharge in the park. The signage will indicate that illicit discharges are illegal and can be detrimental to the wildlife, habitat and water quality of the park. The signs will be designed to promote public awareness of the impacts and consequences of illicit discharges. The messages on the signs will be easily visible and comprehensible by the general public. The signs will not be a hazard to the riders.

Measurable Goals and Monitoring- The measurable goals will consist of the generation and posting of the signs. At a minimum, the OHMVRD will generate and post five signs in areas of the park that are close to Corral Hollow Creek and that are frequently used by park visitors. If possible, the signs will be combined with other signs proposed for Public Education and Outreach (Section 6.1.2.2) in an effort to minimize costs and aesthetic impacts. The signs will be monitored and evaluated to ensure the information and locations are effective.

Implementation Schedule- A draft of the signs will be finished by the end of Year 1. The OHMVRD will identify the posting locations for each sign by the end of Year 1. All signs will be posted by the end of Year 2. The signs will be inspected, updated and maintained at least once per year, but as often as necessary.

6.3.2.3 Illicit Discharge Inspection and Elimination Program

The OHMVRD will develop an inspection program for the detection of illicit discharges. The program will consist of two primary components. The first component of the program will include routine visual inspections of the park. Carnegie SVRA staff will utilize the pollutant source map (Section 6.3.2.1) to target areas where illicit discharges are more likely to occur. Photo points will be established at locations where illicit discharges are most likely to reach the receiving waters. Analysis of photos and corrective measures implemented will be summarized in the annual report. These photo point locations will also appear on the pollutant source map. The routine visual inspections will be conducted by Carnegie SVRA staff once per month and during (or after) a qualified storm event occurs. Inspections will not occur outside of normal business hours or during dangerous conditions. The OHMVRD will generate a succinct inspection form that will be completed for each inspection. The form will include all pollutant sources identified on the pollutant source map, as well as blanks for new pollutant sources that may be identified during the inspection. At a minimum, the inspectors will be required to provide the following information for each pollutant source:

- Whether or not an active illicit discharge was detected
- Whether or not evidence of a past illicit discharge was detected
- The source and nature of the illicit discharge (color, composition, etc.)
- The approximate quantity of the illicit discharge (flow rate or volume)
- The measures that were implemented to stop any active illicit discharges
- The measure implemented to mitigate any impacts caused by active or past illicit discharges

- The measures implemented to prevent future illicit discharges from occurring at that location
- The dates and times all measures were taken
- Storm event data including duration and amount of precipitation

The forms will also include the name of the inspector, the date of inspection, and a blank where the inspector will be required to sign the form. Each month a copy of the photos and the inspection forms will be placed in a binder located at the Carnegie SVRA sector office.

The second component of the illicit discharge detection and elimination program will consist of complaint-driven inspections of illicit discharges. The notification signage discussed in Section 6.3.2.2 will encourage park visitors to contact the ranger station if they observe an illicit discharge. Carnegie SVRA staff will respond to each reasonable complaint by conducting a prompt inspection of the purported discharge (provided that the area can be safely accessed by Carnegie SVRA staff). For each reasonable complaint, Carnegie SVRA staff will complete a separate inspection form. The inspection forms will be developed by the OHMVRD. At a minimum, the inspectors will be required to provide the following information for each incident:

- The name of the inspector
- The date and time of inspection
- The location of the discharge
- The source and nature of the illicit discharge (color, composition, etc.)
- The approximate quantity of the illicit discharge (flow rate or volume)
- The circumstances that caused the illicit discharge
- The person(s) responsible for the illicit discharge (if applicable)
- The measures implemented to stop any active illicit discharges
- The measure implemented to mitigate any impacts caused by active or past illicit discharges
- The dates and times all measures were taken

Each inspector will be required sign and date the inspection form.

Measurable Goals and Monitoring- The measurable goals of the illicit discharge inspection and elimination program will include the development and use of the two inspection forms. All completed inspection forms will be kept on file in the sector office. Carnegie SVRA staff will keep a written record of the number of complaints issued by park visitors and which complaints were responded to by Carnegie SVRA staff. (Park visitors might erroneously classify an allowable discharge as an illicit discharge). The information on the inspection forms will be evaluated as well as the location of discharges, complaints received and actions taken.

Implementation Schedule- The inspection forms will be completed by the end of Year 1. The illicit discharge inspection and elimination program will be implemented by the first month of Year 2. Routine inspections will continue on a monthly basis. Complaint-driven inspections will be conducted on an as-needed basis. The inspection forms for the routine inspections will be updated at least once per year to ensure that they are consistent with the pollutant source map.

6.3.2.4 Educational Materials

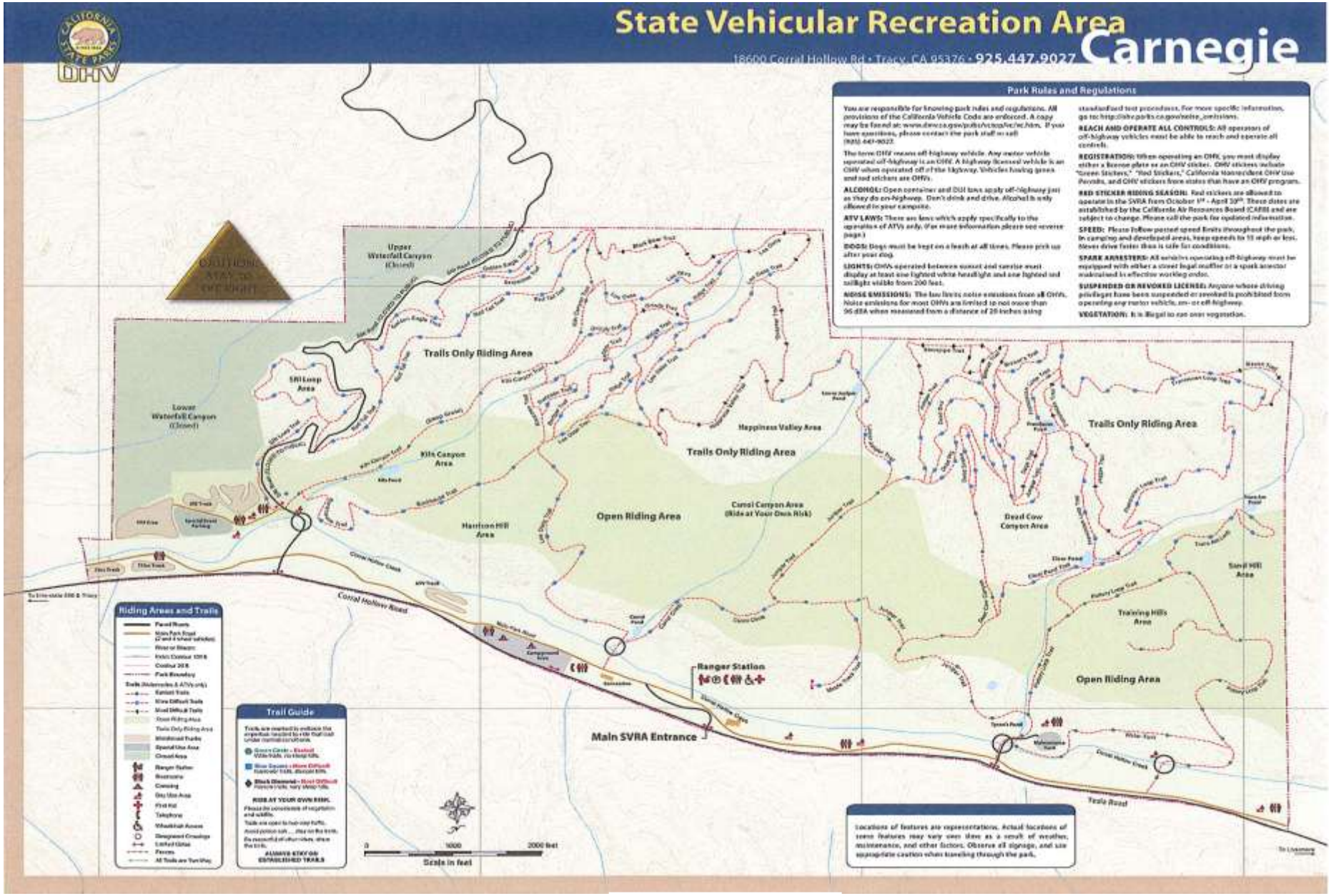
The public education and outreach materials discussed in Section 6.1 (educational brochures, interpretive panels, and booths) will also include information regarding illicit discharge detection and elimination. The educational materials will provide a clear definition of "illicit discharge" as well as examples of illicit discharges that could occur in the park. The educational materials will also encourage park visitors to contact the ranger station if they observe an illicit discharge. In addition, the educational materials will stress the fact that illicit discharges are illegal and punishable by fines or incarceration.

The primary purpose of the educational materials is to promote awareness and public cooperation in protecting and improving water quality. The materials will be designed to educate park visitors, contractors and subcontractors, neighbors, and other community members on the potential sources of illicit discharges in the park and the detrimental impact of those discharges to the area's wildlife, water quality, and public health. The information printed on the educational materials will be easily visible and comprehensible by the general public.

The measurable goals and implementation schedules for the educational brochure, boards, and booths are provided in Sections 6.1.2.1, 6.1.2.3, and 6.1.2.4, respectively.

Table 6-3: Measurable Goals for Illicit Discharge Detection and Elimination BMPs

BMP	Year of Implementation	Measurable Goals
Pollutant Source Mapping	1	• Generate a map of pollutant sources within Carnegie SVRA
	2	• Update the pollutant source map as necessary
	3	
	4	
	5	
Illicit Discharge Inspection and Elimination Program	1	• Generate an inspection form for monthly and storm event inspections • Generate an inspection form for complaint-driven inspections and incidents
	2	• Begin conducing monthly and storm event inspections of pollutant sources • Update inspection forms to be consistent with pollutant source map • Implement complaint-driven illicit discharge inspection and elimination program • Record the number of complaints and responses in the Annual Report
	3	• Conduct monthly inspections of pollutant sources • Update inspection forms to be consistent with pollutant source map • Continue to implement complaint-driven illicit discharge inspection and elimination program • Record the number of complaints and responses in the Annual Report
	4	
	5	
Notification Signage	1	• Complete a draft of the informational sign • Identify the posting locations for each sign
	2	• Post all signs
	3	• Inspect, update, and maintain each sign
	4	
	5	
Educational Materials	1	• See Table 6-1
	2	
	3	
	4	
	5	



Map 1: SVRA Park Map

6.4 Construction Site Storm Water Runoff Control

Clearing, grubbing, and grading activities associated with construction sites can denude large areas of vegetation, which can expose and destabilize the underling soils. Since the natural erosion control mechanisms are removed, sediment is more easily detached and entrained in surface water runoff. Because of this, runoff from construction sites can have a significant impact on the quality of the receiving waters.

Construction sites can be a source of a number of pollutants, including nutrients from fertilizers, pesticides, oil and grease, alkalinity from concrete washouts, hydrocarbons from fuels, lubricants and sealants, and construction debris. However, the primary pollutant of concern at construction sites is sediment since it is available in such large quantities. Excess sediment can cause physical, chemical, and biological harm to the receiving waters and reduce water quality. Particulate-bound pollutants, such as heavy metals and hydrocarbons, can also be transported to the receiving waters with the sediment.

Per the USEPA's minimum requirements, Permittees are required to develop, implement, and enforce a program to minimize or prevent water quality impacts associated with runoff from all construction sites greater than or equal to one acre. The program shall also include disturbances of less than one acre if the disturbance is part of a larger common plan of development. This would include any site or feature specific to the current or future General Plan.

6.4.1 Minimum Requirements

The minimum requirements for Construction Site Storm Water Runoff Control as described in the General Permit are as follows:

- Develop a regulatory mechanism (to the maximum extent allowable by State, tribal, and local law) requiring erosion and sediment controls and other BMPs at construction sites greater than or equal to one acre
- Develop protocols for reviewing construction plans for projects that could potentially impact the quality of the receiving waters
- Develop protocols for the inspection and enforcement of the control measures
- Establish sanctions to ensure compliance with the components of the SWMP
- Develop a program for receiving and responding to public comments and complaints
- Identify, develop and implement the appropriate BMPs and measurable goals to meet these minimum requirements

6.4.2 Meeting the Minimum Requirements

The following sections provide a description of the BMPs that have been proposed by the OHMVRD to meet the minimum requirements of Construction Site Storm Water Runoff Control. The proposed BMPs will supplement the existing BMPs. The measurable goals, monitoring and implementation schedules are summarized in Table 6.4.

6.4.2.1 Construction Site Inspection Program

During the actual construction of the project, the OHMVRD conducts monthly inspections of the construction site to ensure that the SWPPP is being properly implemented. The OHMVRD will develop a succinct inspection form that will be completed for each inspection. At a minimum, the inspectors will be required to provide the following information for each site:

- Name of the inspector
- Name of the contractor
- Date and time of the inspection
- Phase of construction
- Brief description of current construction activities
- A list of each BMP installed at the site
- Whether or not each BMP was installed and maintained in accordance with the SWPPP and BMP Manual
- A brief description of any deficiencies noted with the BMPs
- A brief description of the maintenance requirements for each deficient BMP
- Whether or not there was evidence of an off-site discharge of pollutants

The contractors will be required to remedy all deficiencies noted during the inspections in a timely manner.

Measurable Goals and Monitoring- The measurable goals of the Construction Site Management Program will include the use of the inspection form and the implementation of the program. The OHMVRD will file copies of each inspection form in the sector office with the associated NOI and SWPPP. The OHMVRD will track and monitor the number and nature of the deficiencies noted for each contractor. Any contractor that consistently fails to implement any component of the SWPPP will be dismissed.

Implementation Schedule- Construction site inspections already occur; however, the updated construction site inspection form will be developed by the end of Year 1. The effectiveness of the form will be evaluated annually or as necessary. Inspections will be conducted on a monthly basis for each construction project.

6.4.2.2 BMP Manual

In addition to typical construction site BMPs, the OHMVRD uses an OHV BMP Manual for Erosion and Sediment Control (BMP Manual) to provide guidance on the proper selection, installation, and maintenance of a number of BMPs for OHV-type facilities, trails and construction activities. The BMP Manual has incorporated the designs, specifications and guidelines provided by CASQA and CalTrans which helps to streamline the BMP selection process for construction activities and ensure compatibility with industry standards. For example, fiber rolls are listed as SC-5 in the OHV BMP Manual, SE-5 in

CASQA and SSP 20-060 for CalTrans. As such, the primary construction-related storm water BMPs detailed in the manual include erosion control (blankets, mulches, hydroseeding techniques, etc) scour control (check dams and armoring as in upland swales and ditches, etc.), sediment basins, sediment traps, silt fences, fiber rolls, track-walking techniques, dust control, tracking control, and waste management. The BMP Manual will continue to be reviewed and updated as necessary to ensure the most relevant and innovative BMPs are being used and installed correctly to meet water quality standards to the maximum extent practicable.

Measurable Goals and Monitoring- The measurable goals will include the use of BMPs provided in the BMP Manual for all construction-related projects. The OHMVRD will monitor and evaluate the effectiveness of the BMPs selected from the manual during the construction site inspections (Section 6.4.2.2). BMPs that have not been installed in accordance with the BMP Manual or that prove ineffective will be marked as deficient on the inspection forms. The OHMVRD will keep track of the number of deficiencies for each BMP type for inclusion in the Annual Report.

Implementation Schedule- The BMP Manual is currently used and will be updated as necessary. Evaluation of BMPs will also occur during soil and trail monitoring activities.

6.4.2.3 Engineer and Contractor Training

The OHMVRD will develop a training program for engineers and contractors who will be involved with construction-related activities in the park. The training program will either be held once per year or on an as-needed basis.

The training program will consist of two phases. The first phase will include a classroom presentation that introduces the engineers and contractors to the requirements of the NPDES Construction Permit. The presentation will also serve to educate engineers and contractors on the potential sources of pollutants and illicit discharges at construction sites, as well as the detrimental impact of those pollutants on the area's wildlife, water quality, and public health. One of the primary goals of the presentation will be to provide step-by-step guidance on how to use the construction site inspection form and BMP Manual (Sections 6.4.2.1 and 6.4.2.2).

The second phase of the training program will include a field demonstration of proper BMP installation and maintenance techniques. The field training program will be conducted at Carnegie SVRA by a qualified individual or organization. Alternatively, the OHMVRD may require engineers and contractors to attend an appropriate BMP demonstration workshop offered by another agency or organization.

Measurable Goals and Monitoring- The measurable goals of the training program will include the development and implementation of the presentation. At the end of the training program, engineers and contractors will be required to take a quiz to demonstrate a minimum level of knowledge for selecting, implementing, and maintaining construction-related BMPs. The training program and results from the quiz will be evaluated and updated to ensure the information and guidance provided is clear and appropriate. The OHMVRD will also assess the effectiveness of the training program through the construction site inspections (Section 6.4.2.1).

Implementation Schedule- The development of the presentation phase of the training program will be completed by the end of Year 1. The OHMVRD will either develop the field-demonstration phase of the training program or will find an existing BMP demonstration workshop in Year 2. Engineers and contractors will be required to participate in the training program by the end of Year 2. The training will be held at least once per year, or as often as necessary to ensure that the engineers and contractors are properly trained.

Table 6-4: Measurable Goals for Construction Site Storm Water Runoff Control BMPs

BMP	Year of Implementation	Measurable Goals
Construction Site Inspection Program	1	• Develop the construction site inspection forms
	2	• Conduct monthly SWPPP inspections of each active construction site • Summarize the number and nature of the deficiencies in the Annual Report • Review and update the construction site inspection form as necessary
	3	
	4	
	5	
BMP Manual	1	• Continue to use the BMP Manual
	2	• Conduct monthly inspections of each active construction site for compliance with the BMP Manual • Summarize the number of deficiencies for each BMP in the Annual Report • Update the Manual to incorporate new innovative BMPs cross referenced with CASQA and CalTrans specifications
	3	
	4	
	5	
Engineer and Contractor Training	1	• Develop the presentation phase of the training program
	2	• Develop the field-demonstration phase of the training program or find an existing BMP workshop • Generate the training quiz • Implement the training program • Summarize the effectiveness of the training in the Annual Report
	3	• Evaluate and update the training program and quiz • Summarize the effectiveness of the training in the Annual Report
	4	
	5	

6.5 Post-Construction Storm Water Management

Permanent storm water management and control is essential to protecting the quality of the State's receiving waters. New development and redevelopment projects can be a considerable source of pollutants. If exposed to storm water runoff, these pollutants are readily transported into the receiving waters through ditches and pipes or as sheet flow. Increases in impervious area associated with new development and redevelopment typically increase the volume and peak flow rate of the runoff, thus increasing the mobilization potential of the pollutants. Development of storm water management controls and practices during the planning stages of new development and redevelopment projects is one of the most effective and economical ways of meeting the requirements of the General Permit and the storm water management objectives of this SWMP.

New development projects that require coverage under the General Permit consist of projects that disturbed one or more acres of land during the construction phase. Similarly, Redevelopment projects are defined as projects that alter the footprint of an existing site or building in such a way that there is a disturbance of at least one acre. At Carnegie SVRA, facility development and modification could be considered new development or redevelopment projects. Each will have to be evaluated for compliance requirements.

Post-construction storm water management primarily consists of non-structural and structural BMPs. Non-structural BMPs include strategies and planning procedures for guiding growth and development away from sensitive areas. Preservation of riparian zones, minimization of disturbance and imperviousness, and maximization of open space are also considered non-structural BMPs. Structural BMPs include treatment devices designed to reduce pollutants through sedimentation, adsorption, decomposition, filtration, plant up-take and infiltration. Sediment basins, media filtration, vegetated buffers and bioswales are all considered structural BMPs.

6.5.1 Minimum Requirements

The minimum requirements for Post-Construction Storm Water Management as described in the General Permit are as follows:

- Develop a regulatory mechanism (to the maximum extent allowable by State, tribal, and local law) requiring the implementation of post-construction runoff BMPs at new development and redevelopment projects covering at least one acre of land
- Continue to implement and evaluate structural and non-structural BMPs for the control of post-construction runoff from new development and redevelopment projects
- Ensure adequate long term operation, maintenance and success of BMPs
- Identify, develop and implement the appropriate BMPs and measurable goals to meet these minimum requirements

6.5.2 Meeting the Minimum Requirements

The following section provides a description of the existing BMPs and the BMPs that have been proposed by the OHMVRD to meet the minimum requirements of Post-Construction Storm Water Management. The proposed BMPs will supplement the existing BMPs. The measurable goals and implementation schedules are summarized in Table 6.5.

6.5.2.1 BMP Manual

The BMP Manual noted in section 6.4.2.2 is currently being used by the OHMVRD for erosion and sediment control, trail and development related BMPs in addition to providing guidance on the proper selection, installation, and maintenance of BMPs for post-construction runoff. The BMP Manual has incorporated the designs, specifications and guidelines provided by CASQA and CalTrans which helps to streamline the BMP selection process for construction activities and ensure compatibility with industry standards. The manual also includes structural BMPs, such as sediment basins and vegetated buffers as well as non-structural BMPs, such as stream rehabilitation techniques and proper housekeeping protocols. One of the largest groups of BMPs discussed in the BMP Manual is trail design and maintenance techniques, which is discussed in detail in Section 6.7. The BMP Manual will continue to be reviewed and updated as necessary to ensure the most relevant and innovative BMPs are being used and installed correctly to meet water quality standards to the maximum extent practicable.

Measurable Goals and Monitoring- The measurable goal will include the continued use of the BMP Manual for all post-construction-related BMPs. Selection and implementation of BMPs will be monitored and evaluated for effectiveness.

Implementation Schedule- The BMP Manual will be used, reviewed, and updated on a continuous basis.

6.5.2.2 Site Planning Procedures

Every construction project is reviewed using a Project Evaluation Form (PEF) in which all aspects of project implementation are considered. Project components are assessed for location compatibility, impacts to natural and cultural resources, impacts to air, soil, wildlife and vegetative resources, as well as proximity to water sources and storm water facilities. The form assists park staff in properly designing and constructing facilities in ways that avoid and minimize un-necessary impacts to all sensitive resources, as well as ensure protection of and improvement to water quality.

Measurable Goals and Monitoring- The measurable goal will include the continued implementation of the Project Evaluation Form to assess each project and guide the design of project components to ensure protection of park resources and water quality. The PEFs will remain on file in the sector office.

Implementation Schedule- The OHMVRD has already established the PEF form and will continue to implement the evaluations for all projects as needed.

6.5.2.3 Site Specific BMPs

The SVRA is located in an area of various soil types and extreme terrain. The SVRA also provides a variety of OHV uses and recreational facilities. Each project site requires a thorough assessment of topography, grade, vegetative cover and soil type in order to determine which BMPs are most suitable to stabilize and maintain the site. Depending on the contour of the land, the size and/or length of the project, the type of use desired, and the proximity to natural or cultural resources, selected BMPs such as buffer zones, fencing, directional signage and enforcement are implemented.

Measurable Goals and Monitoring- The measurable goal will include the continued evaluation of all project sites to determine which Site Specific BMP to implement. The effectiveness of these BMPs will be monitored and evaluated during and after installation activities.

Implementation Schedule- The OHMVRD will continue to implement and install Site Specific BMPs.

6.5.2.4 Structural BMPs

In addition to the specific BMPs listed in Section 6.7, the SVRA implements various Structural BMPs for Post-Construction Storm Water Management. Examples of these BMPs are: soil, gravel, and

construction materials are stored in permanent enclosed concrete bins, gravel filled bags are used to stabilize minor hillside work, trails and roads are watered during and after maintenance activities to ensure compaction of materials, roads are graded and installed with rolling dips to reduce accelerated erosion and decrease gully generation, fencing, large rocks, tree limbs and hay bales are used to provide buffer or exclusion zones to prevent OHV access.

These BMPs allow the SVRA to implement a variety of projects while stabilizing construction sites, protecting resources and providing safe OHV recreation without compromising water quality.

Measurable Goals and Monitoring- The measurable goals will include the continued selection and implementation of structural BMPs. The effectiveness of these BMPs will be monitored and evaluated during and after installation activities.

Implementation Schedule- Structural BMPs will be installed as necessary. Maintenance and reinstallation or redesign of BMPs will occur as needed.

Table 6-5: Measurable Goals for Post-Construction Storm Water Management BMPs

BMP	Year of Implementation	Measurable Goals
BMP Manual	1	• Continue to utilize the BMP Manual for all post-construction BMPs • Review and update the BMP Manual as necessary
	2	
	3	
	4	
	5	
Site Planning Procedures	1	• Continue to review all projects using the Project Evaluation Form • Continue to plan and implement projects to avoid and minimize impacts to resources and water quality
	2	
	3	
	4	
	5	
Site Specific BMPs	1	• Continue to evaluate all project sites to determine which BMP is most appropriate • Continue to implement BMPs that avoid and minimize impacts to resources and water quality • Continue to assess and adapt BMPs as necessary
	2	
	3	
	4	
	5	
Structural BMPs	1	• Continue to implement Structural BMPs • Continue to assess projects for compatibility with BMPs • Continue to monitor and evaluate BMPs • Continue to maintain BMPs • Adapt BMPs as necessary
	2	
	3	
	4	
	5	

6.6 Pollution Prevention/ Good Housekeeping

The goal of proper pollution prevention and housekeeping practices is to ensure that routine operation and maintenance activities are conducted in a manner that minimizes the potential for pollutants to come in contact with storm water runoff. Typical operation and maintenance activities include equipment and vehicle fueling, repair, and maintenance, equipment and vehicle washing, roadway and trail repair, landscaping, vector and weed control, painting, sanitary waste removal, and litter control.

Routine operation and maintenance activities often require the use of chemicals and materials that can be detrimental to the quality of the receiving water including fuels, lubricants, paints, solvents, waste materials, fertilizers, insecticides, and herbicides. Proper storage and usages of these materials can provide an effective and economical means of reducing pollutant-laden storm water runoff.

6.6.1 Minimum Requirements

The minimum requirements for Pollution Prevention/Good Housekeeping as described in the General Permit are as follows:

- Develop and implement an operation and maintenance program designed to prevent or reduce pollutant exposure to storm water runoff
- Develop a training program that will teach employees how to incorporate proper pollution prevention and good housekeeping practices into typical park operations
- Identify, develop, and implement the appropriate BMPs and measurable goals for these minimum requirements

6.6.2 Meeting the Minimum Requirements

The following sections provide a description of the existing and proposed BMPs to meet the minimum requirements of Pollution Prevention/Good Housekeeping. The proposed BMPs will supplement the existing BMPs. The measurable goals and implementation schedules for each BMP are summarized in Table 6.6.

6.6.2.1 Employee Training

The OHMVRD will develop an annual training presentation for all maintenance personnel. The purpose of the training presentation will be to educate Carnegie SVRA staff on proper operation and maintenance techniques that will minimize or prevent pollutants from being mobilized into the receiving waters. The training presentation will consist of the following major components:

- An introduction to the NPDES Phase II requirements
- A description of how typical pollutants at the park can adversely impact the park's wildlife, receiving water quality, and human health
- Proper vehicle and equipment management techniques
- Proper vehicle and equipment fueling techniques
- Proper vehicle and equipment washing techniques

- Proper handling and storage of potential pollutants
- Proper spill identification, response, and control procedures
- Proper litter and waste management procedures

The training presentation will also inform the maintenance personnel about any new policies or programs regarding the SWMP. The OHMVRD will consider using existing training materials that are available from the USEPA, SWRCB, and CVRWQCB.

Measurable Goals and Monitoring- The measurable goals will include the development and implementation of the training presentation. A quiz will be given at the end of the presentation to assess the effectiveness of the training program. The OHMVRD will evaluate and track of the quiz results and will update the presentation as necessary. A summary of the training program and its effectiveness will be included in the Annual Report.

Implementation Schedule- The OHMVRD will develop the training presentation and quiz by the end of Year 1. The training presentation and quiz will be implemented by the end of Year 2 and will be given at least once per year.

6.6.2.2 Vehicle and Equipment Maintenance

Vehicle and equipment maintenance activities are conducted in the maintenance shop. The overhead coverage and walls of the maintenance shop prevent direct rainfall and storm water runoff from contacting potential pollutants such as lubricants, oil, grease, and other hydrocarbons. State vehicles and equipment are routinely inspected for damage and leaks and are repaired as necessary. Vehicles or equipment with chronic leaks are typically replaced. Fluids that are removed from vehicles and equipment are recycled or disposed of by a certified contractor. Furthermore, spill kits and absorbents are kept in the maintenance shop for spill cleanup.

Measurable Goals and Monitoring- The measurable goal will include the continued implementation of the current vehicle and equipment maintenance procedures. The procedures will be monitored for compliance and evaluated for effectiveness. Maintenance procedures will be altered as necessary to improve effectiveness.

Implementation Schedule- The OHMVRD has already established an effective vehicle and equipment maintenance program and will continue to implement it as a standard operational practice.

6.6.2.3 Vehicle and Equipment Fueling

All state-owned vehicles and equipment at Carnegie SVRA are fueled in the maintenance yard. The fueling activities are conducted beneath a canopy to prevent direct rainfall from contacting inadvertent fuel spills. Gasoline and diesel are stored in two 500-gallon double-walled above ground storage tanks (ASTs) that are also located beneath the canopy. The ASTs are surrounded by concrete barriers to prevent accidental puncturing by vehicles and equipment. The diesel and gasoline nozzles are equipped with emergency vents and automatic shutoff valves to prevent overtopping. When not in use, the nozzles are also stored in sleeves designed to contain fuel drips. A spill kit is also located next to the fueling station. Drips and spills are immediately cleaned using the spill kits.

Measurable Goals and Monitoring- The measurable goal will include the continued implementation of the current vehicle and equipment fueling procedures. These procedures will be continually monitored and evaluated for effectiveness. Fueling procedures will be altered as necessary to improve effectiveness.

Implementation Schedule- The OHMVRD has already established an effective vehicle and equipment fueling program and will continue to implement it as a standard operational practice.

6.6.2.4 Vehicle and Equipment Washing

State-owned vehicles and equipment are washed on a designated concrete pad in the maintenance yard. The outsides of the vehicles and equipment are cleaned using a pressure-washer. No solvents or detergents are used during cleaning. Wash water is retained on the pad and is allowed to evaporate. Residual material that is left on the concrete pad is manually swept up by Carnegie SVRA staff and disposed of in a proper manner. The OHMVRD will also install a vehicle and equipment washing facility near the maintenance shop to supplement the current washing procedures. The new washing facility will provide improved containment of the wash water.

Measurable Goals and Monitoring- The measurable goals will include the installation of the vehicle and equipment washing facility and the continued implementation of the current vehicle and equipment washing procedures. The vehicle washing area and equipment will be maintained and monitored to ensure residual material is promptly removed.

Implementation Schedule- The OHMVRD has already established a vehicle and equipment washing program and will continue to implement it as a standard operational practice. The OHMVRD will supplement the current washing procedures by installing a vehicle and equipment washing facility when funding becomes available.

6.6.2.5 Material Handling and Storage

Carnegie SVRA staff utilize a number of materials for typical operation and maintenance activities that could degrade water quality if washed into the receiving waters. These materials include motor oil, antifreeze, grease, fuel, transmission fluid, hydraulic fluid, paints, cleaners, herbicides, pesticides, and fertilizers. In order to minimize direct exposure with rainfall and runoff, Carnegie SVRA staff are trained to properly handle and store these materials. For example, all materials described above are stored in covered areas. With the exception of the 500-gallan fuel ASTs, all materials used for vehicle and equipment maintenance are stored in the maintenance shop. The materials are properly labeled and are segregated (where needed) to minimize any potential reactivity between chemicals. Material containers are stored appropriately so that they are less likely to tip over or cause a tripping hazard. Adequate aisle space is maintained in all storage areas to allow easy access for inspections and spill response. The material handling and storage areas are routinely inspected for punctures and cracks that may cause leakage.

Measurable Goals and Monitoring- The measurable goals will include the continued implementation of the current material handling and storage procedures. Materials and storage areas will be properly maintained, monitored and evaluated for effectiveness.

Implementation Schedule- The OHMVRD has already established an effective material handling and storage program and will continue to implement it as a standard operational practice.

6.6.2.6 Spill Prevention and Control

The OHMVRD has developed an “Injury and Illness Prevention Plan” for each SVRA it operates. The plan includes a section titled “Emergency Containment and Cleanup Procedures” that provides proper protocols for spill prevention and control. Carnegie SVRA staff are trained to recognize potential spill situations and to respond to actual spill incidents by implementing the spill response procedures. A copy of the “Injury and Illness Prevention Plan” is kept in the ranger station, maintenance shop, and sector office. Spill kits have also been strategically placed throughout the park so that the spills can be promptly contained and removed.

Measurable Goals and Monitoring- The measurable goals will include the continued implementation of the current spill prevention and control procedures. Implementation of the IIPP will be monitored and evaluated for effectiveness.

Implementation Schedule- The OHMVRD has already established an effective spill prevention and control program and will continue to implement it as a standard operational practice.

6.6.2.7 Waste Storage and Litter Control

Solid waste generated by park visitors is stored in waste receptacles located throughout the park. Each waste receptacle is secured to a pole to prevent it from being toppled over. The OHMVRD will post signs at each waste receptacle to encourage park visitors to place the lids on the receptacles once they have disposed of their trash. The waste receptacles are emptied periodically to prevent overfilling and spillage. Any wind blown litter is collected daily by Carnegie SVRA staff and is also disposed of in the trash container. The contents of the waste receptacles are transferred to a large trash container which is removed by a qualified contractor and transported to a landfill.

Measurable Goals and Monitoring- The measurable goals will include the continued implementation of the current waste storage and litter control procedures. Solid waste receptacles are currently being evaluated for their effectiveness and may be replaced.

Implementation Schedule- The OHMVRD has already established an effective waste storage and litter control program and will continue to implement it as a standard operational practice.

6.6.2.8 Sanitary/Septic Waste Management

Sanitary waste generated from the park's public restrooms is collected in septic systems and released through a leach field. Sanitary waste from the restrooms in the ranger station and maintenance shop is collected in a septic tank system and is pumped out by a licensed contractor, approximately 2 to 3 times per year. If portable toilets are located in the park due to a special event, waste collected in the portable toilets is also removed by a licensed contractor on an as-needed basis during the event and the toilets are removed from the park following the event.

Measurable Goals and Monitoring- The measurable goals will include the continued implementation of the current sanitary/septic tank management procedures. Sanitary waste systems will continue to be maintained and monitored.

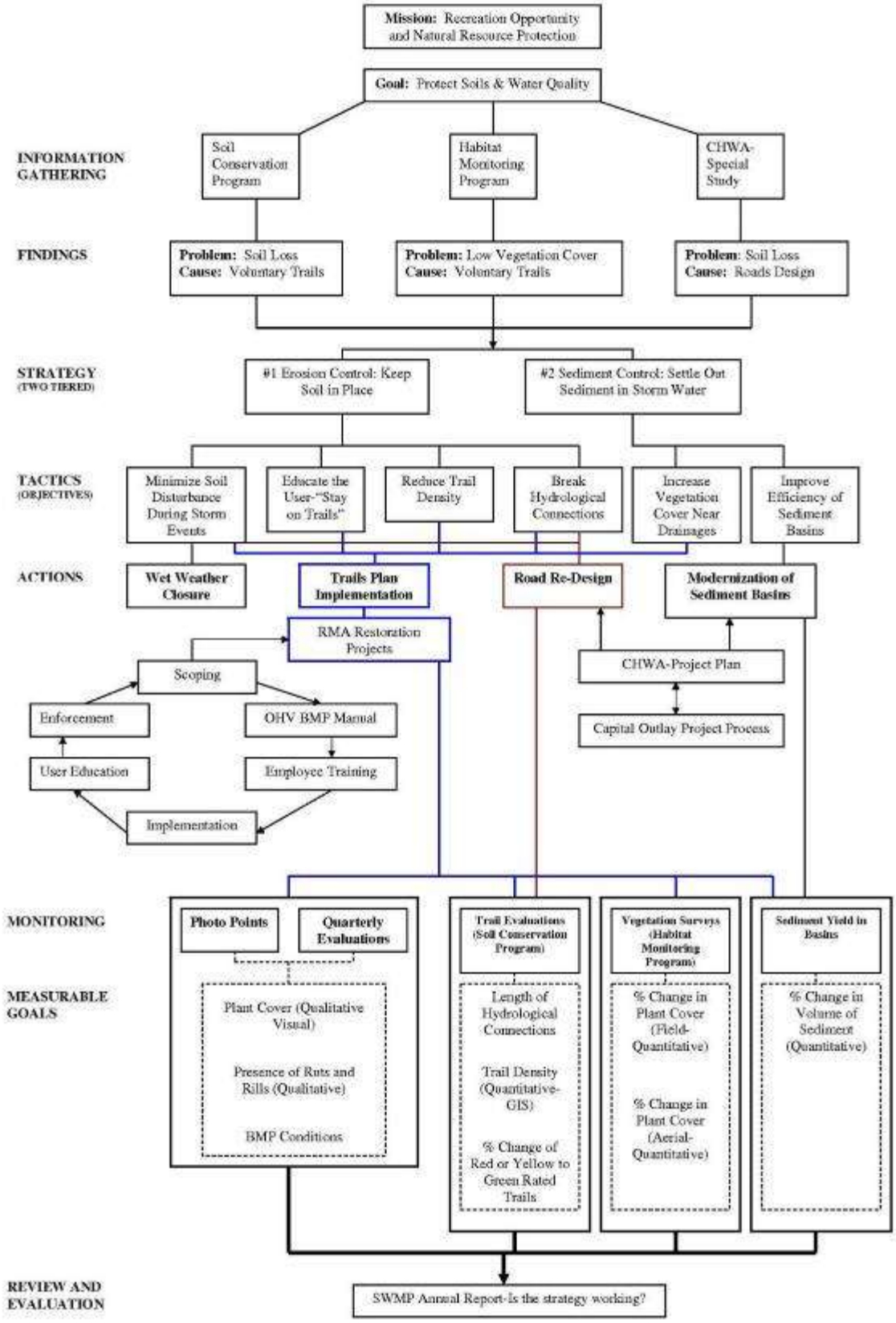
Implementation Schedule- The OHMVRD has already established an effective sanitary/septic tank management program and will continue to implement it as a standard operational practice.

Table 6-6: Measurable Goals for Pollution Prevention/ Good Housekeeping BMPs

BMP	Year of Implementation	Measurable Goals
Employee Training	1	• Develop a training presentation for the maintenance personnel • Develop a quiz for the presentation
	2	• Implement the training program and quiz • Evaluate the training program and update accordingly • Summarize the effectiveness of the training in the Annual Report
	3	
	4	
	5	
Vehicle and Equipment Maintenance	1	• Continue to implement the current vehicle and equipment maintenance procedures
	2	
	3	
	4	
	5	
Vehicle and Equipment Fueling	1	• Continue to implement the current vehicle and equipment fueling procedures
	2	
	3	
	4	
	5	
Vehicle and Equipment Washing	1	• Develop plans for a vehicle and equipment washing facility • Continue to use appropriate vehicle and equipment washing procedures
	2	• Continue to use appropriate vehicle and equipment washing procedures • Secure funds for the vehicle and equipment washing facility • Install vehicle and equipment washing facility when funds are available
	3	
	4	
	5	
Material Handling and Storage	1	• Continue to implement the current materials handling and storage procedures
	2	
	3	
	4	

BMP	Year of Implementation	Measurable Goals
	5	
Spill Prevention and Control	1	• Continue to implement the current spill prevention and control procedures
	2	
	3	
	4	
	5	
Waste Storage and Litter Control	1	• Continue to implement the current waste storage and litter control procedures
	2	
	3	
	4	
	5	
Sanitary/Septic Waste Management	5	• Continue to implement the current sanitary and septic waste management procedures
	2	
	3	
	4	
	5	

FIGURE 2-1: OHV TRAILS AND FACILITIES MANAGEMENT FRAMEWORK



6.7 OHV Trails and Facilities Management

Background and Existing BMPs

Trail systems have the potential to alter a landscape's storm water drainage pattern. These alterations can lead to higher rates of erosion and have a negative effect on storm water quality. For this reason, careful consideration must be given to a trails system design and layout. Once established, careful monitoring is warranted to ensure excessive erosion does not occur.

While most of the SVRA's facilities are found within the flood plain of Corral Hollow Creek, the trail system is primarily located in the steep hills to the south of the creek. These hills can be categorized as four sub-watersheds which drain to Corral Hollow Creek. The trail system itself is divided into two areas, open-riding and trails-only. Approximately half of the trail system, the north side, is "open-riding," which typically consists of grassland habitat with durable clay soils. While park visitors are generally free to travel throughout this area, many portions, including the hill slopes adjacent to the valley floor, have been fenced and closed to reduce trail density and limit erosion. The other half is the "trails-only" area, which consists mostly of coastal scrub, oak woodlands and friable sand/loam soils. Here, visitors are required to stay on established trails and fencing, along with signage and law enforcement actions, is used to increase compliance.

The trails are categorized as primary, secondary, tertiary, and other. The primary trails are accessible by all sizes of vehicles including emergency vehicles. The secondary trails are accessible to ATVs and motorcycles. The tertiary trails are limited to motorcycle use. Lastly, the "other" trails are voluntary trails which have been created by unauthorized OHV recreation. The primary and secondary trails receive annual maintenance which includes grading, out sloping, installing and reconditioning of BMPs, removing outside berms and pruning vegetation, while the tertiary trails are maintained as needed, often by hand. The "other" trails are targeted for closure.

Exclusion of OHV activities occurs through-out the park. Access for OHV use has been restricted in several areas throughout the park in order to improve storm water quality and protect natural and cultural resources. For example, a large portion (70 acres) of the Corral Hollow Creek floodplain is permanently closed to OHV activity delineated by red carsonite markers and fencing. Designated crossings were installed for park visitors to access the trails system south of the creek. For a majority of the creek's reach, this restricted area is at least 100 ft. from the bank-full channel. In a few areas, the creek meanders within 100 ft. of established park facilities or historic sites. While the maximum allowable flood plain area has been closed in these instances, meeting the 75 ft. goal would significantly alter park operations. Solution measures are currently being scoped which involve realigning portions of the creek and reestablishing riparian vegetation within the closure zone, which will also improve creek function. The closed areas are heavily patrolled by the park's law enforcement officers in order to achieve a high level of compliance from the public. The public is restricted to five creek crossings, two of which are hard-surfaced. (Hard-surfacing is being planned for each crossing). These crossings are delineated using white posts and signage that reads "crossing". The closure of portions of the flood plain will allow for a vegetative buffer between the creek and OHV use areas. This vegetative buffer allows for the storm water to slow and sediments to settle prior entering the creek.

Just upslope of the creek, running the length of the park unit, are several steep hills that were used for OHV recreation during the latter part of the 20th century. In 2002, these hills were closed to the public due to the proximity to the creek and the difficulty of settling the sediment out of the storm water. Most of the hills were restored to a more natural contour while others have recovered naturally. Use is still allowed on one hill, known as the hillclimb facility, for occasional competitive hillclimbing events only. This hill has a berm at the bottom to collect sediment and capture storm water, while the hillside is seeded and covered with straw twice each year.

Throughout the park, pockets of sensitive areas are closed permanently to OHV use. These include culturally significant sites including the Carnegie Brick and Pottery Company Ruins and Carnegie Lime Kiln and Quarry Site. Environmentally sensitive areas are also closed for various reasons. For example, the exclusion of OHV activity from the lower sections of the main tributaries and the sediment basins is to protect breeding habitat of amphibian species as well as storm water quality. As a part of the park's strategic trail plan (see *Trails Plan* section), all major drainages will be targeted for protective measures using fencing, rock, and/or landscape features to ensure OHV use is limited.

In other instances, portions of the park are closed temporarily in order to repair and rehabilitate the trails and habitat. These closures allow for vegetation to become reestablished providing clearer distinctions between sanctioned trails and unauthorized routes. A unique example of this management tactic was utilized when the 2009 Corral Fire burnt approximately 200 hundred acres of vegetation within the park. The result was a barren landscape. The area was subsequently closed to the public in order to allow the vegetation to recover and ensure no off trail riding occurred. The trail system and all erosion features were rehabilitated and the area will soon be open to the public via access gates that can be closed if off trail riding occurs. Project details can be found in the 2009 HMS report.

Hillside restoration activities are performed throughout the year to reduce the density of trails, prevent soil loss, and restore habitat. Typically, these activities include permanent removal of unauthorized trails by closing, re-contouring, seeding, and protecting the hillside. Denuded areas are often seeded with a native grass and legumes seed mix, along with mulch and tackifier. Fiber rolls are also installed across the slopes to reduce the overall slope length. The rolls are spaced 20 to 50 feet apart, depending on hill slope and contour, and are anchored with wooden stakes every four feet. Occasionally, in certain grassland areas, fiber rolls are installed with bio degradable jut netting to create a mutually-reinforcing system. Monitoring and evaluation of these BMPs reveal that project activities and erosion control materials are highly effective in minimizing erosion, stabilizing soil and rapidly reestablishing vegetation. These types of projects have been implemented for many years and reaffirms that we are successfully selecting, installing, monitoring and maintaining the BMPs which protect and improve water quality to the maximum extent practicable. Recent examples of these successful projects are the Rocky Knob area (2008/2009), the Raccoon Trail delineation project (2009) and the SRI Loop RMA (2010). Project details can be found in the 2009 HMS report.

Within the SVRA are four tributaries that drain into the creek. Three of these tributaries enter sediment basins prior to joining the creek while the fourth utilizes a series of rock check dams and bio filtration areas to slow and capture sediment. Currently, this drainage enters the motocross track facility prior to entering the creek. A minor capital outlay project is being planned to redirect this drainage away from this facility, as well capture all storm water emanating from this area of the park.

In addition to the sediment basins, which are cleaned out annually, several of the sub-watershed drainages have rock check dams installed to limit incising caused by storm water and also capture suspended sediments. Recent examples of these projects include the Rocky Knob/Dead Cow canyon drainage area (2009) and the Los Osos drainage (2009). Project details can be found in the 2009 HMS report. These BMPs are monitored annually and maintained as needed.

6.7.1 Minimum Requirements

- Evaluate trails for soil loss

- Develop and implement structural and non-structural BMPs for the control of storm water

- Implement the monitoring program to evaluate the effectiveness of BMPs for reducing pollutants in storm water to ensure they are selected and installed appropriately

6.7.2 Meeting the Minimum Requirements

The following sections provide a description of the BMPs that will be used to meet the minimum requirements of OHV Trails and Facilities Management. The BMPs will supplement, rather than replace, the existing BMPs. Also included are the measurable goals, monitoring and implementation schedule for these BMPs to ensure they are meeting water quality standards to the maximum extent practicable. The measurable goals and implementation schedules are summarized in Table 6.7.

6.7.2.1 Overview of Park Assessments

Assessing on the ground conditions is critical to understanding potential problems and their solutions. Park managers rely on two programs to provide this feedback: the Soil Conservation Standards and Guidelines and the Habitat Monitoring System program. Each is discussed in more detail below. Additionally, in 2007 a multi-year, special study of the park's watershed was concluded titled the Corral Hollow Watershed Assessment which is also discussed in more depth below

6.7.2.1.1 The Soil Conservation Standard and Guidelines

The Soil Conservation Standard and Guidelines (Soil Standard), was developed by the OHMVRD to comply with requirements of soil conservation measures under Public Resources Code, Sections 5090.2, 5090.35 and 5090.53. The first guideline was developed in 1991 and updated in 2008.

These guidelines are part of the OHMVRD's internal regulatory function which ensures soil health and erosion control by providing a framework and a series of protocols for soil assessments and response. The park's adoption of the program provides an overall soil conservation plan and specific protocols which the SVRA implements for trail assessment, maintenance, monitoring, compliance, and reporting activities.

The foundation of the Soil Standard is the use of a condition assessment form and GPS field work. An extensive electronic GIS database has been created that represents the spatial extent of each trail within the park. The development of this database relied on a combination of GPS field work and aerial photography. From this database, each trail is assigned a unique identification number by which information can be attached or referenced. This is important because the most valuable and useful information of this program comes from the annual trail condition evaluations in which each trail is monitored and its conditioned assessed. These evaluations are performed on-site using the 2008 Soil Standard and Guidelines protocol. Per this protocol, the soils of the trail are assigned a green, yellow, or red rating based on the condition of the following features: water control, accelerated erosion off of the trail, sediment traps, tread wear, tread width, off-trail travel, watercourse approach, channel width, and stabilization of outboard fill. A green rating indicates the trail is in good condition and the water features, used to reduce erosion, are functioning properly. A yellow rating is assigned when the water features or trail tread are beginning to show signs of deterioration. A red rating indicates the trail is experiencing soil loss at an unsustainable rate and repair or closure is needed. The color rating is then stored in the GIS database to help analyze and guide remediation efforts. Since this assessment is performed annually, trends can easily be depicted.

Photo point monitoring is also utilized to assess conditions of areas that have been challenging to maintain. Currently, five locations are under this monitoring model. Data at these locations is collected and interpreted each quarter. This allows management to keep a close eye on these areas and react quickly if signs of erosion become evident.

Another important function of this program is the tracking of financial impacts and costs of soil rehabilitation projects. The budgetary information is stored using another database titled the Computer Asset Management Program (CAMP). In conjunction with the GIS software, the CAMP database allows us to identify the locations where the greatest costs are incurred and project future funding demands. Additionally, detailed work orders which outline tasks as well as labor and materials needed are generated and tracked using this software.

6.7.2.1.2 The Habitat Monitoring System Program

The Habitat System Monitoring (HMS) program, under Public Resources Code, Section 5090.35 (c)(1), was designed to inventory and protect wildlife populations and their habitats by monitoring whether differences, as measured by wildlife populations, exist between the riding areas and the non-riding areas of the park and/or if these populations are changing over time. If data determines a change is occurring, then measures are identified (e.g. seasonal closure or trail reroutes) to help recover and sustain the population, as well as determine whether changes are occurring due to environmental factors.

Over the past several years (2003-present), bird and amphibian populations have been the focus of habitat monitoring although mammal, reptile and vegetation surveys have also been conducted periodically. In 2009 the program was reviewed and evaluated by outside experts and recommendations for changes were proposed. In 2010 the process of incorporating these recommendations into the program began. As a result, the methodology is changing to better inform management questions and actions.

In regards to attaining the goals set forth in the SWMP related to soil health and clean water, the vegetation measurements performed within the habitat monitoring program can provide one additional indicator for improvement. Vegetation surveys have been conducted in previous years using established plots located throughout the park. Starting in 2010, understory vegetation cover was measured at sites within blue oak and riparian habitats using a point-line intercept method. In the blue oak habitat, data was collected at fifteen sites within the riding area and ten sites within the non-riding area. In the riparian habitat, ten sites were sampled for each treatment. Approximately 40 meters of transects were laid out at each site randomly. Along these transects, vegetation, bare soil, and erosion (ruts) were measured. In 2011, grassland vegetation will be measured and each of these three habitats will be measured on a two-year cycle thereafter. Vegetation cover measurements within the California Sagebrush-Black Sage community will be conducted using aerial photography. The first round of photography was taken in 2010 and will be taken at regular intervals in the future. These measurements of vegetation allow management to quantify the level of trail density that exists and if change is occurring over time.

Several photo points are also established throughout the park as part of the habitat monitoring program. These photos are a qualitative measurement that reflects the condition of the intended target. Of particular relevance to the SWMP program will be the subset of sites which are located within the Corral Hollow Creek riparian zone which is closed to OHV recreation. These riparian zone closure photo points will assist management in determining if natural vegetation recruitment is occurring or if it needs to be augmented with plantings and seed.

6.7.2.1.3 The Corral Hollow Watershed Assessment

The Corral Hollow Watershed Assessment (CHWA) was the result of years of research, hydrologic studies and field investigations conducted by an interdisciplinary team of dedicated specialists and experts in the fields of ecology, cultural resources, erosion and sediment control, geomorphology, hydrology, hydraulics, and water quality.

In order to fully understand the sources of erosion and causes of sediment mobilization to Corral Hollow Creek, an extensive field inventory of the existing access roads, trails, stream crossings (intersection of

streams and drainages), and gullies encompassing all of the Carnegie SVRA properties was conducted. Erosion impacts were highest for steep, poorly draining trails and roads. Stream crossings that were diverted away from their natural flow path (due to the formation of inboard ditches or rills) exhibited the highest erosion potential and greatest loss of sediment, while crossings that were diverted through properly installed and maintained culverts exhibited the lowest erosion potential and sediment loss. Most of the gullies that were inventoried appeared to have been the result of improperly designed roads and trails and appeared to be actively incising. Each of the features that were evaluated during the inventory was assigned a rehabilitation priority ranking based on the likelihood of it contributing sediment to the creek, as well as recommendations for corrective actions. High priority features have been rehabilitated first and many of these features have been fixed by implementing a number of BMPs including sediment basins, hill slope restoration, area closures, improved conveyances and trail rehabilitation. The OHMVRD has also requested funding to implement the recommended large scale, Capitol Outlay water quality improvements.

6.7.2.2 Overview of Erosion and Sediment Control Strategies for OHV Trails and Facilities

The strategy to improve the storm water quality at the park is a two-tiered approach. The park's first priority is to keep the soil in place by ensuring erosion control. The second line of defense is sediment control.

6.7.2.2.1 Erosion Control

Preventing the mobilization of soil is the most cost effective and environmentally responsible approach to achieving the goals of the SWMP. Once soil mobilizes in storm water it can be extremely challenging to recover. This soil recovery process requires three very difficult actions to be executed. First, the storm water transporting the sediment must be slowed or captured so the sediment settles. This is difficult because sediment can stay suspended in the water column for long periods of time even if the water is stagnant. Next, the soil must be transported back to the hillside. The transportation and relocation phase is usually very expensive and sometimes nearly impossible due to the lack of access and steep terrain. Third, once back on the hillside, the soil must be stabilized and vegetation needs to be reestablished to ensure erosion does not occur again. Some of the park's vegetation communities take a long period of time to recover. Thus, keeping the soil in place and preventing erosion is the most effective approach to achieving our goal.

Several tactics listed below will be utilized to prevent erosion and ensure successful erosion control to the maximum extent practicable:

- Reduce trail density
- Break hydrological connections
- Reduce the velocity of concentrated flows
- Develop sustainable trails
- Minimize soil disturbance during storm events
- Educate the OHV user to "stay on trail"

Reduce trail density. Many of the trails within the network were created years ago, prior to the creation of the SVRA. These trails had no land use planning and lack the appropriate design needed to minimize soil loss. By reducing the trail density, vegetation will be reestablished helping minimize rain drop erosion, allowing for more storm water to be absorbed into the soils and lessoning the erosive dynamics locally and down stream.

Break hydrological connections. Many of the roads and trails within the network were built to access livestock and now abandoned industrial sites. They too lacked the appropriate road design and

construction techniques needed to minimize soil erosion. All routes leave an imprint on the soil whether they are created by wildlife, hikers, horses, equipment or off highway vehicles. The longer the trail, the more storm water can accumulate and gain speed, leading to accelerated erosion. One tactic used to prevent this erosion is to break hydrological connections by making the trail segments shorter using sudden elevation changes (breaks-in-grade) and other trail features such rolling dips.

Reduce the velocity of concentrated flows. High velocity flows have the power to incise and mobilize soil. Like all trail networks, the park's trails have changed the drainage patterns within the watersheds and have reduced levels of vegetation cover. Vegetation can be beneficial as it obstructs and slows storm water flow resulting in a lower concentration and velocity of the storm water. If vegetation is absent, then these benefits are not realized and erosion can be a consequence. Reducing the velocity of concentrated flows will rely on the reduction of trail density and hydrological connections along with an increase in obstruction measures such as vegetation or rock check dams.

Develop sustainable trails. Sustainable trails are needed to ensure that natural resources and water quality are protected. A trail is sustainable when minimal erosion occurs. Properly designing and constructing these trails to withstand weather and OHV use is critical, as well as designing trails to be fun and challenging so the user is not tempted to go off trail.

Minimize soil disturbance during storm events. Disturbing soil during a storm event creates a greater likelihood that the soil will become mobilized and suspended in storm water. Limiting recreation and preventing soil disturbance during this period will help ensure more soil stays in place.

Educate the OHV user to "stay on trail". Education will be vital to ensure a cultural shift occurs within the Carnegie OHV community. Each user needs to understand the advantages of staying on properly designed trails and the consequences of riding off-trail.

6.7.2.2.2 Sediment Control

Even if the erosion control strategy is successful, the presence of roads and trails will change the watershed's hydrology and lead to some increase in sediment in the storm water. The second part of the strategy will focus on capturing as much sediment as possible prior to the storm water entering Corral Hollow Creek. Three tactics will be used to achieve the objective of capturing sediment to the maximum extent practicable:

- Increase vegetation cover near drainages
- Settle sediment out of the sub-tributaries
- Settle sediment out of the main tributaries

Increase vegetation cover near drainages. Vegetation is important to sediment control because it slows storm water and consequently settles out sediment from the water column. Keeping the sediment from reaching the drainages and conveyances will greatly improve the storm water quality of the park. Protecting the vegetation on the hillsides immediately upslope of the drainages is one measure that will help protect storm water quality locally within each sub watershed. Similarly, reestablishing vegetation within the flood plain of Corral Hollow Creek will buffer park operational activities from the channel of the creek.

Settle sediment out of the sub-tributaries. Slowing and temporarily retaining storm water within the sub-tributaries using check dams and vegetation will allow for partial capture of sediment and also reduce the velocity of the flow (erosion control). This tactic allows for the recovery of the soil much closer to its origin reducing overall costs. It also will reduce the sediment volume in the basins allowing for greater basin capacity.

Settle sediment out of the main tributaries. Sediment basins capture and retain storm water to allow for sediment to settle to the bottom of the basin. As a result, water discharged from the basin is cleaner

than the water entering the basin. The CHWA found the park's three primary sediment basins could be more effective at removing sediment and should be improved by increasing their holding capacity and changing their shape to be more consistent will industry standards. The basins, which were originally designed as stock ponds, are too small to capture all of the storm water generated during large events and are currently being re-designed.

6.7.2.3 Overview of Measurable Goals and Monitoring

To meet the objectives of the SWMP several projects have been identified. This section provides an overview of the measurable goals and monitoring activities which will be used to ensure the projects being implemented are successful. The measurable goals, monitoring activities and implementation schedule are provided for each project or policy and summarized in Table 6.7.

6.7.2.3.1 Measurable Goals

- An increase in vegetation cover
- An increase in vegetation cover in Corral Hollow Creek buffer
- A decrease in signs of erosion (rills)
- A decrease in sediment within storm water
- A decrease in yellow and red rated trails
- An increase in drainage buffer areas
- A decrease in turbidity within water courses
- A decrease in hydrological connections
- An increase in sediment capture
- An increase in sediment holding capacity within the basins
- An inventory of BMPs implemented
- An evaluation of BMP effectiveness and conditions
- Hill closures that coincide with storm events

6.7.2.3.2 Monitoring

- Quarterly Evaluations (Qualitative)
- Photo Points (Qualitative)
- Annual Trail Evaluations (Qualitative)
- Vegetation Surveys (Quantitative)
- Sediment Yield (Quantitative)
- Turbidity Readings (Quantitative)
- GIS Analysis (Quantitative)
- Precipitation data

6.7.2.4 Projects and Policies

Using the identified strategy, several projects and policies have been either implemented or are being conceptualized to help meet the objectives of the SWMP. Each project/policy in the SWMP utilizes one

or more of the identified tactics. Cumulatively, these projects and policies will be monitored to ensure the park is achieving its objectives. The details of each project and policy are below.

1. The Trails Program Project
2. Road Re-Design and Sustainability Project
3. Sediment Basin Modernization Project
4. Wet Weather Closure Policy
5. Corral Hollow Creek-Limited Access Policy

6.7.2.4.1 Project #1: The Trails Program

The trails program is a strategy developed by the park to address a variety of trail issues. It consolidates the years of experience in restoration and park management along with the OHV BMP manual into one cohesive approach aimed at reducing voluntary trails, increasing vegetation cover, improving water quality, protecting habitat and providing a quality recreational experience.

Brief History of Trail Management

Many attempts have been made in the past to address the issue of voluntary trails. The drafters of the park's general plan recognized that some areas of the park needed to be more restrictive and created the "trails only" area. This model is still in place with "open riding" in the north and "trails only" in the south. Unfortunately, these designations were ineffective at keeping users on designed trails. Over the past 25 years, the off-trail riding problem has been partially mitigated by permanent closure of some areas and rehabilitation of many others. Although effective in the short term, these areas were mostly selected based on the severity of the problem in that immediate area and did not take into account the need for a connected trail system. Many projects also lacked either the proper education of the public, enforcement of the rules, and/or physical barriers needed to prevent off-trail riding from reoccurring. Through the years, park staff have become well educated on the local site conditions and, through trial and error, the effectiveness of the various erosion control practices.

Trails Program Principals

A new trails program was adopted in 2009. This program uses the lessons of the past to derive the key principals that make up the foundation of the new plan. Similarly to the SWMP program, the goal of this program is to protect the health of the soil and bring the trails system into a well managed network. The principals that guide this plan are as follows:

- The new approach is long term. The problem can often be fixed within one or two seasons but may take several years of monitoring and possible maintenance to ensure sustainability.
- Individual projects use a three-tiered approach of physical barriers, education, and enforcement to help ensure off-trail riding does not reoccur.
- The implementation of the trails program focuses on one resource management area with subsequent projects being implemented within adjacent areas. This continuity helps with enforcement and education.
- Individual projects are designed with sustainable trails that anticipate upcoming projects in the adjacent areas. This is done in order to provide connectivity from one project area to another resulting in an improved park wide trails network and better recreational experience, thereby lessoning the temptation to go off-trail.

- The type of riding use allowed is determined by soil characteristics. Some soils are durable enough to allow for longer vertical trails while other areas only permit trails that are cross slope, with frequent breaks in grade.

Resource Management Areas

Following these principals, Resource Management Areas (RMA) have been established for the park. The RMAs are discrete zones established to better plan and implement management activities of areas that share common characteristics. For the most part, the RMAs were divided by sub-watersheds and cover the entire SVRA. A map and RMA details can be found in the 2009 HMS report.

Implementing the SWMP Tactics

The trails program will utilize five of the six erosion control tactics of the SWMP program and two of the three sediment control tactics.

Erosion Control

- Reduce trail density
- Break hydrological connections
- Reduce the velocity of concentrated flows
- Develop sustainable trails
- Educate the OHV user to “stay on trail”

Sediment Control

- Increase vegetation cover near drainages
- Slow and settle storm water in the sub-tributaries

RMA Restoration Projects-The Process

Scoping: Rehabilitating a RMA begins with a scoping meeting that identifies the problems and goals for each project. The project planning process takes into consideration several items including trail layout, connectivity, emergency access, user interest, enforcement strategy, education methods, buffer zones and a timeline for completion of the project.

Restoration: The on-the-ground restoration work begins with identifying any trails that have proven to be sustainable and that do not convey high concentrations of storm water elsewhere. These trails are usually incorporated into the RMAs trail network. Trails that have been identified as erosive per the soil conservation programs dataset are eliminated from the trials network and the area restored. Eliminating these trails from the network often involves using heavy equipment to place soil back on the hillside and bring the hillside back to grade. Once in place, the soil is protected using BMPs from the OHV BMP manual. Typically, the BMPs used are a combination of straw wattles, which reduce the velocity of concentrated water, and hydro mulch, which protects the soil from precipitation. If the hydro mulch machine is unable to access the area then straw is used to cover the bare soil. Staff are trained in proper implementation techniques and the work is supervised by experienced restoration specialists. These efforts result in an overall reduction in trail density for the area, along with a shortening of hydrological connections, two tactics outlined in this program. Special attention will be given to developing buffer zones near drainages by limiting trail density and soil disturbance within these areas to provide adequate bio-filtration (sediment control).

Once the restoration is complete, the focus turns toward providing sustainable trail access. Over the past several years, park personnel have received classroom and field training from Trails Unlimited, an enterprise of the U.S. Forest Service, on proper trail design and construction to achieve minimal impact

on the soil and habitat. This is achieved primarily by minimizing hydrological connections using a BMP called breaks-in-grade. By changing the elevation to a positive grade at regular intervals, storm water volume is divided into lower concentrations. Most of these methods have been used in the park for several years and have shown high levels of success.

The most innovative approach to the trails plan has been a redesign of the methods used to protect the trails and restored areas. In the past, drift fencing was the primary tool to keep riders off of a rehabilitated area. In this plan, fencing will be used differently. Each rehabilitated RMA will now have perimeter fencing with access gates at the entry points. If/when voluntary trails are created the access gates are closed for a predetermined amount of time to allow for staff to make repairs and to reinforce the trails only message. This method is being used in the first rehabilitated RMA (SRI Loop) and since the four weeks of the areas reopening only two voluntary trail offenses occurred. The gates were closed and a citation was issued for one of the occurrences.

Education: The public education and outreach component of the trail plan is inclusive of tours, brochures, and interpretation panels. SPPOs lead tours for park visitors through newly rehabilitated areas to discuss the issues of off-trail riding and the park's plan regarding future riding opportunity. These tours give mangers an opportunity to hear from the public about the trail plan and incorporate any suggestions into future projects. Just as important, this provides a forum to discuss and educate the public on the negative effects of off-trail riding. Only a fraction of the users can attend the tours, so other educational methods are warranted. Large interpretation panels are posted throughout the park and handouts are distributed at the front kiosk. Similar to the tours, the literature explains the issues associated with high trail density, rehabilitation efforts, and the importance of protecting and improving water quality.

Enforcement: After the rehabilitation work is completed and the area is open to the public, the RMA is heavily patrolled by SPPOs. Off-trail violations will result in temporary closure of the entire area and citation(s) are given to the offender(s) when possible. This is critical to ensure the areas do not relapse into eroded hillsides and rutted trails. The violations that resulted in the closure are highly publicized so the users understand the consequences of riding off-trail. This publicized message is inclusive of photos and details of the damage and displayed on the interpretive panels at the trail head and at the kiosk.

Now that the first RMA is complete, implementation of this management model will focus on the adjacent RMA (Kiln Canyon). Similar to the SWMP, this plan uses an adaptive management approach and will remain flexible in order to incorporate the lessons learned as the model is implemented in the different RMAs.

Measurable Goals and Monitoring - Measurable goals will include an increase in vegetation cover, decreased signs of erosion (rills), a decrease in the number of yellow and red rated trails, a decrease in the annual sediment yield, an increase in drainage buffer areas, a decrease in turbidity within water courses and an evaluation of BMP effectiveness.

Monitoring will be crucial for verifying the effectiveness of the chosen strategy and tactics. The results of the monitoring will be summarized in the annual report and the strategy will be evaluated to ensure the objectives of the project and the goal of the program are being met. Monitoring will include:

1. Quarterly Evaluations (Qualitative)
2. Photo Points (Qualitative)
3. Annual Trail Evaluations (Qualitative)
4. Vegetation Surveys (Quantitative)
5. Sediment Yield (Quantitative)

6. Turbidity Readings (Quantitative)

Quarterly Evaluations: The RMA restoration projects will utilize several BMPs as part of the erosion and sediment control strategy. The selection of these BMPs will rely on assessments guided by experience and the OHV BMP manual along with the physical characteristics of the landscape. Quarterly evaluations will be used to verify that assumptions made during the planning phase are correct and the BMPs are functioning properly. There is also the potential for these BMPs to deteriorate over time or become damaged due to OHV activity. For these reasons, regular inspection is warranted. Each restoration project will be visually inspected on a quarterly basis for vegetation cover, signs of erosion, and BMP conditions and effectiveness.

The quarterly evaluations will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective measures will be drafted and implemented. The evaluations along with the corrective measures will be included in the annual report.

Photo Points: Photos are crucial in assessing the effectiveness of the chosen tactics and allow for everyone interested to judge the site conditions for themselves. Photo points have and will continue to be established for each RMA using GPS to record the location and direction of the photo. GIS software is used to produce maps which give an overview of photo point distribution of the project. The photos themselves are managed using Picasa software that allows for easy categorization and identification. Although not always possible, park personnel make every effort to snap the photo within the same timeframe to better assess pre- and post-project results.

The photo points will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective measures will be drafted and implemented. The evaluations along with the corrective measures will be recorded and included in the annual report.

Annual Trail Evaluations (Soil Standard): The soil standards annual trail condition evaluations provide a feedback loop for determining the effectiveness of the chosen tactics. As mentioned before, these evaluations are performed on-site using the 2008 Soil Standard and Guidelines protocol. Per this protocol, the soils of the trail are assigned a green, yellow, or red rating based on the condition of the follow matrix: water control, accelerated erosion off of the trail, sediment traps, tread wear, tread width, off-trail travel, watercourse approach, channel width, and stabilization of outboard fill. The color rating is then stored in the GIS database to help analyze and guide remediation efforts. The GIS provides a robust platform and allows managers to overlay restoration projects on top of the trail rating data. From here, a direct relationship can be drawn between activities and soil conditions.

Vegetation Surveys (HMS)*:* The habitat monitoring protocols for vegetation surveys provide a quantitative feedback loop for managers. Vegetation cover is randomly measured along with bare soil and signs of erosion throughout the park. An increase in vegetation cover and a decrease in erosion features would be a positive sign that the erosion control tactics are effectively working. Several of the erosion tactics identified can be evaluated using this monitoring methodology.

Sediment Yield: Sediment yield within the parks basins can be quantified each year by the amount of sediment captured and then extracted. Presumably, if the measures implemented are succeeding, an annual reduction in sediment yield should follow. Baseline data would still need to be collected before trends can be established.

Turbidity Readings: Several monitoring points will be established throughout the park. These locations will include the inlet and outlet of Corral Hollow Creek along with the inlet and outlet of the three sediment basins. Data will be collected during each qualified storm event when flows occur but will be limited to normal business hours and safe conditions. As the trails plan is implemented, each “restored” sub-watershed can be evaluated against the other sub-watershed(s). If the tactics chosen are effective, a decrease in turbidity would be expected over time.

Implementation Schedule – The Trails Program BMP projects are currently being implemented and will be adapted as necessary. Monitoring and evaluation of BMPs will be on-going and the results will be summarized in the annual report.

6.7.2.4.2 Project #2: Road (Primary Trail) Redesign and Sustainability Project

Project Description

One of the recommendations from the CHWA was to redesign the roads within the park to reduce their erosion potential. The CHWA identified past, present, and future sources of erosion from the road and trail reaches, stream crossings, and the associated gullies within the park. The researchers evaluated the relative quantities of sediment lost, the probability of future erosion, the likelihood of sediment delivery to the creek, and the feasibility and chance of successful treatment. The researchers used a "geomorphic" approach to the inventory that was developed by the National Park Service and DPR. Once the issues were identified, rehabilitation measures were developed for each inventoried feature. These rehabilitation measures were designed to provide economical and feasible solutions to mitigate current erosion and sediment mobilization issues while preventing potential future issues. The road and trail reconstruction measures are intended to be cost effective, reduce maintenance, increase seasonal access for staff and most importantly, reduce the down slope impacts of improper road and trail drainage (gullies, landslides, and sediment delivery). The recommended rehabilitation efforts would be implemented by Carnegie SVRA staff, equipment contractors, and/or Trails Unlimited. California Conservation Corps (CCC) members, California Department of Forestry and Fire Protection (CDFFP) inmate crews and other volunteer groups may also be included in the rehabilitation process to provide an additional workforce or assist with public education and outreach. Contracts currently exist with these agencies.

Many of the objectives are aimed at reducing the overall soil disturbance and hydrological connections that currently exist. Breaking these connections will rely on a number of methods including out sloping, rolling dips, reducing trail width, reroutes, and hard surfacing. Hard surfacing will include the installation of rock and road base on a majority of the roads to reduce erosion and allow staff safe access in the hills during and after rain events. This project has been funded as a Capitol Outlay improvement and is undergoing final environmental review and working drawings. The improvements will be made to 8.1 miles of roads, 27 stream crossings, and 16 gullies comprising 14.7 acres of land, within the Carnegie SVRA.

Measurable Goals and Monitoring - Measurable goals will include the identification of current hydrological connection lengths in order to quantify the reduction of these connections, an inventory of BMPs implemented and an evaluation of BMP effectiveness.

Monitoring will be crucial for verifying the effectiveness of the chosen strategy and tactics. The results of the monitoring will be summarized in the annual report and the strategy will be evaluated to ensure the objectives of the project and the goal of the program are being met. Monitoring will include:

1. Quarterly Evaluations (Qualitative)
2. Photo Points (Qualitative)
3. Annual Trail Evaluations (Qualitative)
4. GIS Analysis (Quantitative)

Quarterly Evaluations: The road redesigns and sustainability project will utilize several BMPs as part of the erosion control strategy. The selection of these BMPs will rely on corrective measures outlined in the CHWA. Quarterly evaluations can be used to assess BMPs to determine if they have deteriorated over time or have become damaged due to OHV activity. The quarterly evaluations will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective

measures will be drafted and implemented. The evaluations along with the corrective measures will be included in the annual report.

Photo Points: Along with the quarterly evaluations, photo points will be established to assess the BMPs being evaluated. The photo points will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective measures will be drafted and implemented. The evaluations along with the corrective measures will be recorded and included in the annual report.

Annual Trail Evaluations (Soil Standard): The soil standards annual trail condition evaluations will provide the feedback loop to determine the soil conditions of the roads.

GIS Analysis (Soil Standard): The current hydrological connections will be inventoried using GIS software. The project's BMPs will be cataloged as they are implemented and a measure of the hydrological connections will be made after the project is complete. A pre and post description can then be made regarding the hydrological connections and the BMPs can be evaluated to ensure the hydrological connections remain broken.

Implementation Schedule – The preliminary design drawings and environmental review are funded and almost complete. Construction drawings are scheduled for Year 2 with construction activities scheduled to begin in Year 3 (FY 2013/2014). The implementation of these projects assumes the OHMVRD will be able to obtain necessary permits from the various regulatory agencies and continue to receive the funding that has been appropriated by the Department of Finance. As with any large scale or capitol outlay project; unforeseen circumstances could potentially delay or modify any portion of the proposed BMP plan.

6.7.2.4.3 Project #3: Sediment Basin Modernization Project

Project Description

Sediment control is the second tier of the SWMP strategy which helps ensure suspended sediment does not enter Corral Hollow Creek. Two of the three sediment control tactics identified earlier, increasing vegetative buffers near drainages and settling sediment out of storm water in the sub-tributaries, will be utilized in the trails plan and primary trail redesign projects. The third tactic, capturing storm water within the main tributaries, is the focus of the sediment basin modernization project.

Over the past thirty years, the sediment control strategy of the park has relied on three basins at the mouths of the three largest tributaries within the park. Collectively, these basins receive runoff from approximately 70 percent of the park's hills, which is the primary area of recreation. Many of the basins were originally constructed as stock ponds and have not been properly constructed for storm water treatment. However, the basins appear to be effective at reducing sediment loads to Corral Hollow Creek as indicated by the large amount of sediment that is recovered from the basins each year. Once dry, the sediment in the basins is removed and used for upland restoration projects throughout the park. In order to maintain the treatment effectiveness of the existing basins, the OHMVRD will redesigned or relocate the basins as necessary to provide a more stable and effective means of sediment control. The basins help to manage storm water runoff from the trails and roads located in the upper portions of the park.

Improving the efficiency of the sediment basins is the focus of this project. The CHWA research found that the present design of the sediment basins was too deep, did not allow for proper settling of sediment or evaporation of the water and recommended upgrading these systems to meet current industry standards. Recommendations were based on the individual basins tributary characteristics and ranged from adding or relocating basins to using skimmers to drain each basin.

Tyson Basin System: At the moment, this sub-watershed (400 acres) is buffered from the creek by a 10,000 ft² basin (Tyson Basin). An additional sediment basin has been proposed immediately

upstream of Tyson Basin to augment the treatment effectiveness of the existing sediment basin. The proposed basin will be referred to as the Tyson Pretreatment Basin. The basin will serve as a pre-treatment BMP for the removal of large particles. Pretreated flows from the basin will enter Tyson Basin via a buried PVC pipe. The inlet pipe to Tyson Basin will discharge to a riprap apron to prevent scouring. The addition of the pre-treatment basin will reduce the maintenance requirements of Tyson Basin and will significantly reduce sediment fluxes into Corral Hollow Creek at this location. Collectively, Tyson Basin and the new basin will provide 48 hours of detention time for water quality treatment.

Carrol Basin System: Over the past thirty years, this sub-watershed (234 acres) has been treated by a 4,500 ft² basin (Carrol Basin). The most significant issue with this basin is the size. An increase in capacity is needed to maximize sediment recovery. The project will focus on relocating or adding a sediment basin to increase capacity either upstream or downstream. A PVC skimmer may be used to drain the basin.

Kiln Basin System: Currently, this sub-watershed (222 acres) is buffered from the creek by a 1,800 ft² basin (Kiln Basin). A new sediment basin has been proposed near the base of Kiln Canyon to augment the current basin in this drainage. Since the basin will be in a high-traffic area, it will be surrounded with a rider access barrier. The basin will be designed to provide 48 hours of detention time and will help to manage storm water runoff from any trails or roadways located in the upper portions of Kiln Canyon.

Measurable Goals and Monitoring - The goal of this project is to increase the effectiveness of the park's sediment basin systems. Measurable goals include collecting baseline turbidity data, implementing the modernization project, seeing lower turbidity readings in the discharged storm water at the basins outfall, an increase in sediment holding capacity, an increase in sediment settling and a decrease in sediment yield due to improved erosion controls upland.

Monitoring will be crucial for verifying the effectiveness of the chosen strategy and tactics. The results of the monitoring will be summarized in the annual report and the strategy will be evaluated to ensure the objectives of the project and the goal of the program are being met. Monitoring will include:

1. Turbidity Readings
2. Sediment Yield

Turbidity Readings: Monitoring points will be established at the inlet and outlet of the basin systems. Data will be collected during each storm event when flows occur but will be limited to normal business hours. As the project is implemented, each modernized basin system can be evaluated against the old system. If the tactics chosen are effective, a decrease in turbidity would be expected over time.

Sediment Yield: A decrease in sediment yield would be expected with the implementation of the trails program projects as they continue to reduce erosion.

Implementation Schedule - The preliminary design drawings and environmental review are underway. Construction drawings are scheduled for Year 2 with construction activities scheduled to begin in Year 3 (FY 2013/2014). The implementation of these projects assumes the OHMVRD will be able to obtain necessary permits from the various regulatory agencies and continue to receive the appropriated funding form the Department of Finance. As with all large scale or capitol outlay project; unforeseen circumstances could potentially delay or modify any portion of the proposed BMP plan.

6.7.2.4.4 Policy #1: Wet Weather Closure

Policy Description

When wet weather occurs, the parks hills are closed to recreation. In the past, this determination was made by solely assessing the site conditions of the roads (primary trails). If an emergency vehicle could not travel safely on these trails, then the gates were closed. Closures would remain in place until the site had dried enough to allow access of emergency vehicles. As mentioned earlier, this closure reduces the likelihood of soil becoming dislodged and transported by storm water. Several hill closures take place in a typical year and include all of the park's trails. However, the valley floor of the park remains open including the 4x4 obstacle course, the MX track, 70cc track, 110cc track, ATV track, campground, concession store, entrance station, day use parking, and related facilities.

Moving forward, a quantitative cumulative precipitation measurement will be used to trigger park closures. Using hydrological models and historical conditions, the following thresholds were determined as points where the soil becomes saturated and sheet flow occurs. Please note, the park hills may be closed due to safety or environmental concerns at any time regardless of these thresholds set below.

- 12 hrs: >0.30"
- 24 hrs: >0.50"
- 48 hrs: >0.65"

As measured by the rain gauge at the entrance station, if any of these thresholds are realized, then all of the park hills will be closed. The hills will remain closed as long as precipitation levels remain above the listed amount for the allotted time period. The hills may re-open if:

- The park has had a minimum 12 hr closure.
- The hill slopes have dried sufficiently and soils are stable enough to support OHV use. This will be determined at the monitoring locations and hill areas using the following criteria: presence of surface water, excessive soil rutting by vehicles, BMP damage, and insufficient traction for support vehicles (see Figures 1-6 below).

However, the hills, or portions of the hills, may remain closed due to safety or environmental concerns as determined by park managers.

Policy Implementation Process

Below is a step by step process aimed at clarifying when wet weather policy compliant hill closures and re-openings will occur.

<u>Closure</u>

If the answer is "yes" to any of questions 1-3 below, then the parks hills will be closed.

1) In the last 12 hours, has it rained more than 0.30 inches?
2) In the last 24 hours, has it rained more than 0.50 inches?
3) In the last 48 hours, has it rained more than 0.65 inches?

<u>Re-Opening</u>

The hills, or portions of the hills, should only be re-opened if **all** of the following conditions are met:

- Site conditions are safe.

- No environmental or resource concerns exist.
- Storm water BMPs are functional and in good condition, e.g. rolling dips and basins.
- The hills have been closed for at least 12 hours.
- The hill slopes have dried sufficiently and soils are stable enough to support OHV use. This will be determined at the monitoring locations and hill areas using the following criteria: presence of surface water, excessive soil rutting by vehicles, BMP damage, and insufficient traction for support vehicles (see Figures 1-6 below).

Rutting is defined as the creation of depressions made by the tires of vehicles. Rutting occurs when the soil strength is not sufficient to support the applied loads from vehicle traffic.

Currently, other wet weather policy criteria and methodologies are being investigated. Considerations are being given to soil moisture probes, shear tests, and other field tests with the goal of measuring soil moisture directly and quantitatively. It is anticipated the investigation and updated policy will be in place in the winter of 2012.

Figure 3. Example of significant rutting and unstable conditions. The indentations were created by a typical emergency response vehicle.

Figure 4. Unstable site conditions. The impression of the footprint and sheen of surface flow suggest the site is not dry enough to reopen.

Figure 5. Example of unstable site conditions. The impression of the footprints suggest the site is not dry enough to reopen.

Figure 6. Example of significant rutting and unstable conditions. The indentations were created by a typical emergency response vehicle.

Figure 7. Example of stable conditions. Recent vehicular activity in the foreground show minimal signs of rutting.

Figure 8: Example of stable conditions. Recent vehicular activity in the foreground show minimal signs of rutting.

Measurable Goals and Monitoring - The goal of this project is to reduce sediment generation during wet weather. The measurable goals include continued closure of the hills during and after storm events.

Monitoring of this policy will be crucial for verifying the effectiveness of the chosen strategy. The results of the monitoring will be summarized in the annual report and the strategy will be evaluated to ensure the objectives of the policy and the goal of the program are being met. Monitoring will include:

1. Precipitation Data
2. Photo Points

Precipitation data will be recorded along with the duration of the hills' closures.

Photos of the trail taken at the entrance gates will be collected to verify site conditions. Photos must be taken when re-opening the hills at each access gate to verify that conditions are stable per the re-opening criteria stated above. These photos will be included in the storm event report.

Implementation Schedule – The policy will be implemented immediately.

6.7.2.4.5 Policy #2: Corral Hollow Creek-Limited Access

Policy and Project Description

Corral Hollow Creek is closed to OHV recreation. This policy was implemented with the goal of reestablishing riparian vegetation in order to improve biodiversity and storm water quality. Vegetation settles out sediments through bio-filtration (sediment control). This closure or buffer area is variable throughout the creek's reach but typically is over 75ft. from the channel. OHV use is limited to five established crossings. One crossing (Maintenance Bridge) is elevated above the creek. Another crossing (SRI Road) is a hardened crossing which significantly minimizes the turbidity. Hardened crossing are planned for the remaining three (Pottery, Middle Track, and Los Osos). Hardening entails protecting the creek bottom with a surface that is less likely to contribute turbid material to the storm water when vehicles use the crossing. Various materials can be used including asphalt, concrete, culverts, etc. A newer product, articulated concrete block (ACB), is going to be used for the upcoming crossing improvements. ACB provides a hard surface that is flexible enough to accommodate various vehicle weights without fracturing, yet strong enough to remain stable during heavy water flow events.

Measurable Goals and Monitoring - The goal of this project is to reestablish vegetation within the Corral Hollow Creek floodplain where riding is prohibited. Measurable goals will include an increase in vegetation cover.

Monitoring will be crucial for verifying the effectiveness of the chosen strategy and tactics. The results of the monitoring will be summarized in the annual report and the strategy will be evaluated to ensure the objectives of the project and the goal of the program are being met. Monitoring will include:

1. Vegetation Surveys
2. Photo Points

Vegetation Surveys (HMS)*:* The habitat monitoring protocols for vegetation surveys provide a quantitative feedback loop for managers. Briefly, vegetation cover is randomly measured along with bare soil and signs of erosion throughout the park. An increase in vegetation cover and a decrease in erosion features would be a positive sign that the erosion control tactics are effectively working. Several of the erosion tactics identified can be evaluated using this monitoring methodology.

Photo Points: Photos are crucial in assessing the effectiveness of the creek closure zone and determining if the vegetation is becoming reestablished. Photo points have and will continue to be used in the closure zone using a GPS to record the location and direction of the photo. GIS software is

used to produce maps which give an overview of photo point distribution of the project. The photos themselves are managed using Picasa software that allows for easy categorization and identification. Although not always possible, park personnel make every effort to snap the photo within the same timeframe to better assess pre- and post-project results.

The photo points will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then enhanced restoration measures will be considered, e.g. plantings.

Implementation Schedule – The policy will continue to be implemented. Monitoring and evaluation of its effectiveness will be summarized in the annual report.

6.7.2.4.6 Policy #3: Dust Suppressant Use

Policy Description

In May 2012, State Parks reviewed and summarized literature on available dust suppressant products including the operational and environmental benefits and consequences of their application (Elsholz, 2012). After careful review, it was clear that dust suppressants can benefit the air and water quality of the park. In particular, the literature indicated that magnesium chloride was the most effective for the climate and is the least harmful to the environment. The literature also indicated BMPs that could be used to reduce the negative environmental effects of the product while maximizing the benefits. Going forward, the park will continue to use magnesium chloride while implementing the following BMPs:

- Repair unstable road surfaces prior to magnesium chloride application.
- Do not apply magnesium chloride during storm events.
- Restrict the use of magnesium chloride within 25 feet of Corral Hollow Creek.
- Maintain an inside berm (creek side) along the road to prevent accidental excess material from entering the Corral Hollow Creek.
- Adhere to manufactures minimum and maximum application rate.
- If road surface is dry, dampen.
- Monitor chloride levels during the Metals Assessment (see below).

Table 6-7: Measurable Goals for OHV Trails and Facilities Management BMPs

BMP	Year of Implementation	Measurable Goals
Trails Program Projects	1	• Continue to evaluate, rate and record soil conditions (Soil Standards) • Continue to perform on-site monitoring and assessment of vegetation (HMS) • Continue to connect trail systems and corridors • Improve trail design, trail signage and enforcement within all 8 Resource Management Areas • Customize trail designs to best fit the local soil type, terrain and habitat • Continue to implement rehabilitation and restoration activities • Continue to monitor and evaluate the effectiveness of BMPs • Record activities in Annual Report
	2	
	3	
	4	
	5	
Road Redesign and Sustainability Project	1	• Continue to maintain existing Roads • Complete the preliminary plan designs • Complete environmental review
	2	• Develop construction plans • Submit permit requests to regulatory agencies
	3	• Obtain final funding for construction • Obtain permit approvals from regulatory agencies • Implement construction activities
	4	• Implement construction activities • Monitor and evaluate the effectiveness of BMPs • Record activities in Annual Report
	5	
Sediment Basins Modernization Project	1	• Continue to maintain existing sediment basins • Complete the preliminary designs for basin modification • Complete environmental review
	2	• Develop construction plans for basin modifications • Submit permit requests to regulatory agencies
	3	• Obtain final funding for construction • Implement basin modifications
	4	• Implement basin modifications • Monitor and evaluate effectiveness of basin modification • Adapt and implement additional BMPs and/or basin modification designs if necessary • Record activities in Annual Report
	5	
Wet Weather	1	• Continue to restrict OHV access during wet weather events • Continue to maintain and patrol closed areas

Closure Policy	2	• Continue to restrict access in sensitive areas to protect resources and improve water quality • Continue to patrol closed areas • Restrict OHV access in all major drainages
	3	
	4	
	5	
Corral Hollow Creek Limited Access	1	• Continue to restrict OHV access • Develop construction designs for hardened crossings • Continue environmental review • Obtain funding to install crossings
	2	
	3	• Submit permit applications to regulatory agencies
	4	• Construct creek crossings • Monitor and evaluate effectiveness of creek crossings • Adapt and implement additional BMPs and/or basin modification designs if necessary • Record activities in Annual Report
	5	

6.8 BMP MONITORING PROGRAM

The following section provides a summary of the monitoring described throughout the document. The monitoring program is designed to evaluate the effectiveness of the BMPs implemented and guide future BMP implementation. Most of the monitoring efforts and the annual report will be overseen by the park's Environmental Scientist and the data will be stored into the park's habitat monitoring database (Microsoft Access). Trails related monitoring will be overseen by the park's Trail Supervisor including trail evaluations and BMP quarterly assessments.

Law Enforcement: State Park Peace Officers (SPPO) will continue to enforce the state laws and regulations including park policies. SPPOs will continue to monitor RMAs to ensure the signage and policy is being obeyed, e.g. park users remain on approved trails. These patrols are conducted daily, with the highest frequency occurring on the weekends. Punitive closures of RMAs along with citation data for each RMA will be summarized in the annual report.

Precipitation Data: A rain gauge is located at the entrance station and is monitored by staff. This data is recorded daily. This data will be used to trigger hill closures and initiate storm event based sampling (turbidity). The Lawrence Livermore National Laboratory's Site 300 rain gauge, approximately 2.5 miles to the north, will also be monitored and data recorded. Since this data is online 24 hours/day and is updated every 15 minutes, it can be used as an indicator of site conditions after hours.

Turbidity Readings: Several monitoring points will be established throughout the park. These locations will include the inlet and outlet of Corral Hollow Creek along with the inlet and outlet of the three sediment basins (See Map 2). Measurements will be made once during each qualified storm event (if flow occurs) and will be limited to normal business hours (800-Susent) and safe conditions. Samples will be collected in accordance with the guidelines for turbidity field measurements in the *Marine Pollution Studies Laboratory-Department of Fish and Game (MPSL-DFG) Standard Operating Procedures (SOPs) for Conducting Field Measurements and Field Collections of Water and Bed Sediment Samples in the Surface Water Ambient Monitoring Program (SWAMP)* (p 11).

Turbidity Photo Points: Pictures will also accompany the turbidity monitoring effort described above. Photos will be taken in accordance with the picture guidelines found in the *Marine Pollution Studies Laboratory-Department of Fish and Game (MPSL-DFG) Standard Operating Procedures (SOPs) for Conducting Field Measurements and Field Collections of Water and Bed Sediment Samples in the Surface Water Ambient Monitoring Program (SWAMP)* (p 2).

RMA Photo Points: Photos are crucial in assessing the effectiveness of the chosen tactics and allow for everyone interested to judge the site conditions for themselves. Photo points have and will continue to be established for each RMA using GPS to record the location and direction of the photo. GIS software is used to produce maps which give an overview of photo point distribution of the project. The photos themselves are managed using Picasa software that allows for easy categorization and identification. Although not always possible, park personnel make every effort to consistently take the photo at the same time of day as the previous photos. Photos will be taken quarterly at all active RMA project sites and at other general BMP photo stations.

The photo points will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective measures will be drafted and implemented. The evaluations along with the corrective measures will be recorded and included in the annual report.

Quarterly Evaluations: The RMA restoration projects will utilize several BMPs as part of the erosion and sediment control strategy. The selection of these BMPs will rely on assessments guided by experience and the OHV BMP manual along with the physical characteristics of the landscape. Quarterly evaluations will be used to verify that assumptions made during the planning phase are correct and the BMPs are functioning properly. There is also the potential for these BMPs to deteriorate over time or become damaged due to OHV activity. For these reasons, regular inspection is

warranted. Each restoration project will be visually inspected on a quarterly basis for vegetation cover, signs of erosion, and BMP conditions and effectiveness.

The quarterly evaluations will be reviewed by the park Environmental Scientist and Trails Supervisor. If deficiencies are detected, then corrective measures will be drafted and implemented. The evaluations along with the corrective measures will be included in the annual report.

The quarterly evaluations, along with the RMA restoration projects, will be described in full in the HMS annual report. As such, BMP prescriptions, locations, and evaluations will be identified as each RMA restoration is under taken. For example, the SRI Loop RMA is included in the 2010 HMS report.

GIS Analysis (Soil Standard): Prior to restoring an RMA, the current hydrological connections will be inventoried using GIS software. The BMPs associated with the RMAs restoration activities will be cataloged as they are implemented and a measure of the hydrological connections will be made after the project is complete. A pre and post description can then be made regarding the hydrological connections and the BMPs can be evaluated to ensure the hydrological connections remain broken.

Annual Trail Evaluations (Soil Standard): The soil standards annual trail condition evaluations provide a continual inventory and assessment of trail conditions and BMPs which assists in determining the effectiveness of the chosen tactics. These evaluations are performed on-site using the 2008 Soil Standard and Guidelines protocol. Per this protocol, the soils of the trail are assigned a green, yellow, or red rating based on the condition of the following matrix: water control, accelerated erosion off of the trail, sediment traps, tread wear, tread width, off-trail travel, watercourse approach, channel width, and stabilization of outboard fill. The color rating is then stored in the GIS database to help analyze and guide remediation efforts. The GIS provides a robust platform and allows managers to overlay restoration projects on top of the trail inventory and rating data. From here, a direct relationship can be drawn between activities and soil conditions. A summary of each year's efforts are found within the HMS annual reports including descriptive statistics and maps of the ratings and trail types.

Vegetation/Trail Density Surveys (HMS Program)*:* The habitat monitoring protocols for vegetation surveys provide a quantitative assessment of vegetation health and density. Vegetation cover along with bare soil and signs of erosion throughout the park is measured using aerial photography and on-the ground visual surveys. An increase in vegetation cover and a decrease in erosion features would be a positive sign that the erosion control tactics are effectively working. Several of the erosion tactics identified can be evaluated using this monitoring methodology. For methodology and result details, see the 2010 HMS report.

Sediment Yield: Each year, park staff removes sediment from the basins. This is completed using heavy equipment such as an excavator and dump trucks. This provides a method for quantifying the sediment yield within the parks basins annually. Each year, the sediment yield removed will be measured along with the capacity of the basin. Presumably, if the BMP measures implemented are succeeding at the maximum extent practicable, then an annual reduction in sediment yield should follow (as controlled by precipitation). Baseline data will be collected to establish trends.

RECEIVING WATER LIMITATIONS

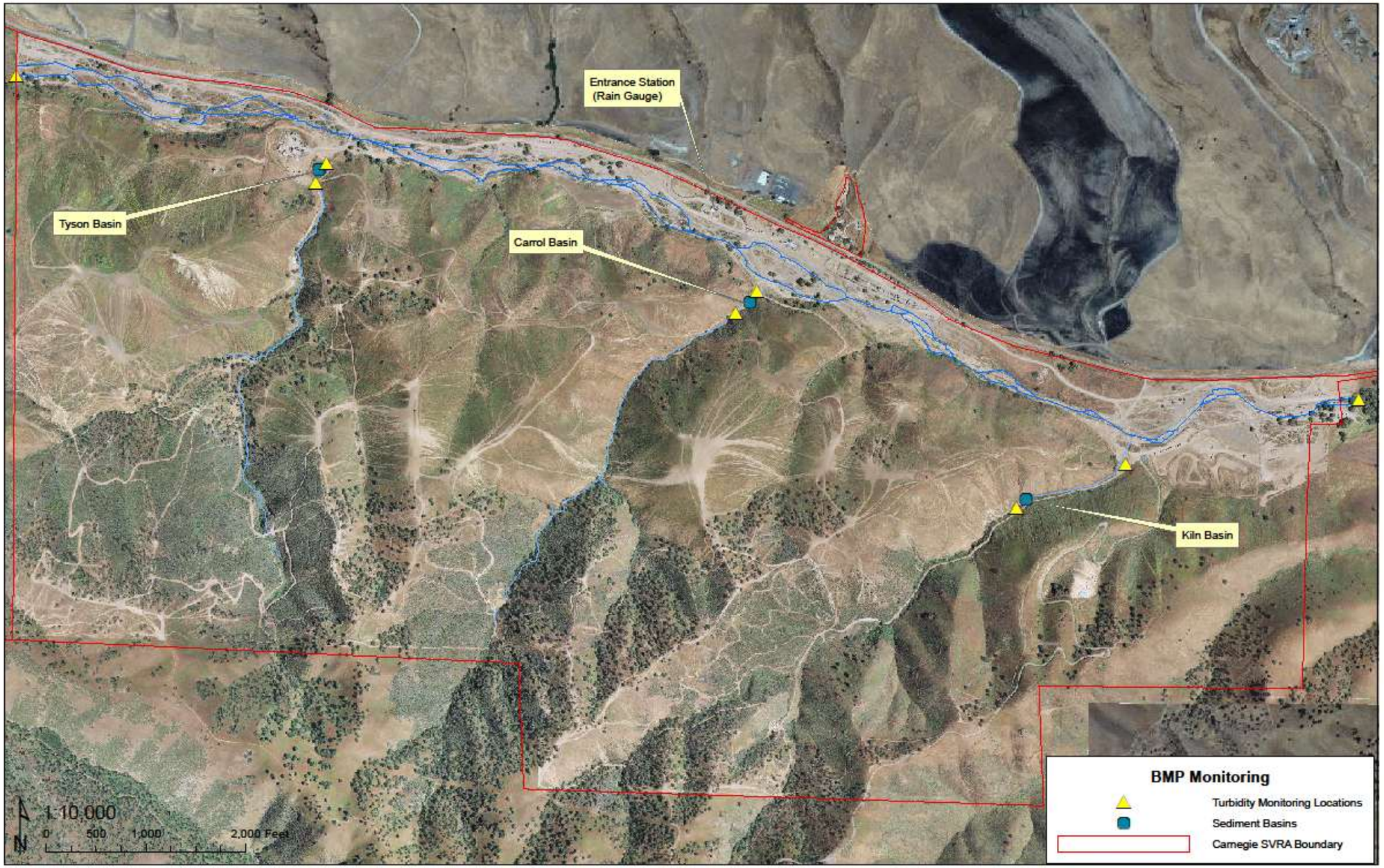
State Parks shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable Regional Water Board Basin Plan. State Parks shall comply with receiving water limitations through timely implementation of control measures/BMPs and other actions to reduce pollutants in the discharges and other requirements of this Order including any modifications. The Storm Water Management Plan shall be designed to achieve compliance with receiving water limitations. If exceedance(s) of water quality objectives persist notwithstanding implementation of other storm water program requirements of this Order, State Parks shall assure compliance with receiving water limitations by complying with the following procedure:

1. Upon a determination by either State Parks or the Regional Water Board that MS4 discharges are causing or contributing to an exceedance of an applicable water quality standard, the Permittee shall promptly notify and thereafter submit a report to the Regional Water Board that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of water quality standards. The report shall include an implementation schedule. The Regional Board may require modifications to the report;

2. Submit any modifications to the report required by the Executive Officer within 30 days of notification; and
3. Implement the actions specified in the report in accordance with the approved schedule.
4. So long as State Parks has complied with the procedure set forth above and is implementing the actions, State Parks does not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the State Water Board or the Regional Water Board to develop additional BMPs.

Table 6.8: Summary of BMP Monitoring Activities

Monitoring Acitivity	Parameter Measured	Location(s)	Schedule
Law Enforcement	Citations Issued, Punitive RMA Closures	Park Wide	Ongoing
Precipitation Data	Inches	Entrance Station, LLNL Site 300	Ongoing
Turbidity Reading	NTU	Corral Hollow Creek, Sediment Basins	Once/Storm Event
Turbidity Photo Points	Pictures	Corral Hollow Creek, Sediment Basins	Once/Storm Event
RMA Photo Points	Pictures	RMA Restoration Projects	Quarterly
Quarterly Evaluations	BMP Conditions, Soil Conditions, Vegetation Cover, Corrective Actions	RMA Restoration Projects	Quarterly
GIS Analysis	Hydrological Connections, BMP Locations, RMA Site Maps	RMA Restoration Projects	Annually
Annual Trail Evaluations (Soil Standard)	Trails Conditions, Erosion, Trail Tread, BMP Conditions	Park Wide	Annually
Vegetation/Trail Density Surveys	Vegetation Cover, Bare Soil, Rills	Habitat Monitoring Sites (Randomly Selected, Park Wide)	Biannually
Sediment Yield	Cubic Yards of Sediment	Sediment Basins	Annually



Map 2: BMP Monitoring-Turbidity Locations

7 METALS ASSESSMENT PLAN

The following section provides a summary of the metals assessment of the SVRA and its surroundings. The investigation will be conducted in two phases. The first phase is designed to be broad while the second phase is designed to use the results of Phase 1 and narrow down the likely source of any pollutant found. There are four main objectives of the metals assessment plan.

1) Determine if tested elements are present in Corral Hollow Creek.
2) If present, determine if levels of elements exceed water quality objectives.
3) If water quality objectives are exceeded, determine if the nonpoint source(s) of those pollutants can be attributed to activities within the SVRA. This may lead to the implementation of phase 2.
4) If sources are determined to be within the SVRA, develop BMPs to reduce the pollutants to the maximum extent practicable.

Testing Parameters

Metals are of concern because of their acute and chronic toxic effects on aquatic life and the potential to bioaccumulate in aquatic organisms. Recent water quality sampling conducted by Geosyntec (OHMVRD, 2007; Table 7.1) revealed the heavy metal concentrations were generally low and only exceed the California Toxics Rule (CTR) criteria for copper in one sample. However, metals such as copper, chromium, and zinc, have been selected as pollutants of concern since they are prevalent in vehicle components and can be deposited in the watershed through typical vehicle wear and leaks. Additional sources of metals include fuels, adhesives, paints and other coatings, buildings, infrastructure, and the remnants of tailing piles associated with historic mining activities.

Table 6.9: Summary of CHWA Monitoring Activities. The amounts are reported in ppm. All sample locations listed are within the SVRA.

Element	Symbol	Concentration	Date: 4/4/05 Sample Stations					Date: 3/20/06 Sample Stations				
			1	2	4	5	6	1	2	4	5	6
Silver	Ag	Disolved	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA
Arsenic	As	Disolved	**0.0014**	**0.0013**	NA	**0.0012**	ND	ND	ND	ND	**0.0019**	NA
Cadmium	Cd	Disolved	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA
Chromium	Cr	Disolved	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA
Copper	Cu	Total	**0.007**	**0.015**	NA	**0.0025**	**0.019**	**0.0048**	**0.0034**	**0.014**	**0.0029**	NA
Iron	Fe	Disolved	NA	NA	NA	NA	NA	**0.15**	**0.15**	**0.46**	**0.15**	NA
Mercury	Hg	Disolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	Pb	Disolved	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA
Selenium	Se	Disolved	ND	ND	NA	ND	ND	**0.0012**	ND	**0.0014**	ND	NA
Zinc	Zn	Total	**0.02**	**0.029**	NA	ND	**0.03**	**0.0055**	**0.0052**	**0.02**	**0.008**	NA

This metals assessment will focus on the more common elements found in OHVs including aluminum, chromium, copper, zinc, lead, cadmium, iron, and mercury. All parameters will be tested as total and dissolved levels of concentrations. Also, chloride levels will be measured to help evaluate any negative water quality effects from the application of magnesium chloride which is used as a dust suppressant.

Sampling Stations

Phase 1

The phase 1 sampling will occur at 16 locations (See Map 7.1). The locations were selected to better identify nonpoint pollution sources and the variables tested are outlined in table 7.2. These sampling stations were selected to help isolate sources of the selected elements since those elements are common in all motorized vehicles and equipment. They are not solely found in OHVs. The stations are

designed to provide background data on the watershed, contributions that may be coming from the remnant mines, traffic from the county road, OHV recreational areas, and the explosive testing facilities.

Table 6.10: Summary of Dependent Variables Tested by Location.

Sample Station	Dependent Variables						
	Grazing	Tesla Mine Site	County Road	Site 300	Residences	OHV, Trail Use	SRI
M1	X						
M2	X	X					
M3	X	X	X		X		
M4	X	X	X		X		
M5	X	X	X		X		
M6	X	X	X		X		
M7	X	X	X	X	X		
M8	X					X	
M9	X					X	
M10	X					X	
M11	X					X	
M12	X					X	X
M13	X					X	X
M14	X					X	X
M15			X	X			
M16	X	X	X	X	X	X	X

- Sample station M1 was selected to characterize background conditions. Land use in this area is primarily cattle grazing.
- Sample station M2 was selected to describe any changes that may have occurred as a result of the Tesla Mining District.
- Sample station M3 is located at the drainage point of Bakers Ravine which is a fairly large watershed with known uses that include various mining activity, the county road, grazing and at least one residence.
- Sample stations M4, M5, and M6 are included to reflect possible contributions from the county road as well as residences.
- Sample station M7 is the point where Corral Hollow Creek runs onto the SVRA and therefore provides the background level needed to make assessments and comparisons.
- Sample stations M8-M11, M13, M14 are included to isolate OHV trail use and the pollutant control effectiveness of the sediment basins (M9, M11, and M14).
- Sample station M12 is aimed at determining the background rate of run-on within the Kiln canyon and will be used to further describe any effect that OHV trail activity may have on this watershed.
- Sample station M15 will provide data on drainage from Site 300 and the county road.
- Lastly sample station M16 is the discharge point of Corral Hollow Creek off of the SVRA property.

Once the data from the phase 1 metals assessment is collected, we will have better understanding of whether selected elements are present. If an element is present and increased in concentration above the allowable limit within the SVRA, then either a BMP plan will be developed aimed at reducing levels

or, if pollutant sources are unclear, a more focused investigation will be performed (phase 2). If measurements of elements within the SVRA are consistent with background levels and/or do not reach levels of concern in phase 1, especially at the SVRA discharge location (M16), then phase 2 may not be warranted.

Phase 2

Phase 2 of the metals assessment will only occur if data from phase 1 indicates high concentrations of the tested elements exist and can not be attributed to one of the variables tested. For example, if an element is found to have increased above water quality objectives from sample station M7 to M16 and that element's increase cannot be reasonably explained by the data collected, then new locations will be selected. In this scenario, potential areas to focus phase 2 monitoring efforts could be the maintenance shop, the campground, Site 300 facilities, the county road culverts, and cultural sites.

Sampling and Data Analysis-Quality Assurance

Data collection for phase 1 of the metals assessment plan is scheduled to occur during the winter season of 2012/13. Samples will be collected during four qualified storm events at all 16 locations assuming flow occurs. In order to control for variables, every effort will be made to collect samples from all 16 locations during the same storm event(s). It is anticipated data collection will begin only after seasonal flow returns to Corral Hollow Creek since several of the sample locations are located in the stream. In order to test for non-point source pollution, run-off or sheet flow needs to occur during the time of sample collection. Therefore, samples from locations will not be collected during non-qualified storm events.

Data collection, storage, and transportation (unless the lab sends a courier) will be performed by the park's Environmental Scientist, Clinton Elsholz, and will be guided by the Surface Water Ambient Monitoring Program's Quality Assurance Management Plan.

Each sample station will need one 500 ml polyethylene pre-preserved with Nitric Acid. Labels will be placed on each bottle with the station ID, sample code, matrix type, analysis type, project ID, and date and time of collection (in most cases, containers will be pre-labeled). After sampling, the label will be secured by taping around the bottle with clear packaging tape. If it can be done safely, every attempt will be made to collect samples from the center of the stream. The sample collector will wear polyethylene gloves and stand downstream while making the collection. The 500 ml bottle will be rinsed thoroughly using ambient water prior to collection. The 500 ml bottle will be held under water (approx 4 inches below the surface), opened and then closed once filled. If flow is too low to submerge the 500 ml bottle, then water will be collected using a secondary container and poured into the 500 ml bottle on-site. The secondary container will be kept clean and rinsed with ambient water prior to the sample station collection (John, 2000). Ice chests with ice will be in the field vehicle and samples will be placed in the ice chest as soon as possible (within 45 min). The temperature within the ice chest will be maintained below 39.2ºF. The samples will be transported to the lab or picked up by a lab courier as soon as possible. In most cases, this will likely be within 24 hours of collection or the next business day. All parameters will be analyzed in accordance with USEPA holding time (Mercury is the shortest holding time-28 days). Each ice chest will have a separate Chain of Custody (COC) which includes project ID, sample ID, collection time/date, matrix ID and name of the person currently with custody. The original COC will remain with the samples. Analysis of the samples will be conducted at a SWRCB approved lab and USEPA guidelines for storage and handling of storm water samples will be followed.

The lab will report the results of the analysis within 30 days. This data will be stored in the park's habitat monitoring database (Microsoft Access®). The data will be summarized by sample station and reported to the RWQCB by August 1, 2013. Some of the data may be grouped together based on the dependent variables being tested. It is anticipated that after this review is complete the RWQCB will provide direction on future actions.

Map 3: Phase 1 Metals Assessment Sample Stations.

8 BMP STATUS UPDATE

This section is aimed at providing an annual evaluation of the park's BMPs. The goal of this effort is to make sure each BMP is assessed and in good condition prior to the wet season. The inspection report will be due annually on November 15th. The report will include a table that summarizes the conditions of the BMPs, several maps that identify the BMP locations, and selected photos to validate the conditions. BMPs include rolling dips, basins, check dams, fences, gates, culverts, and carsonites (see Table 6.11). In Table 6.12, a list of actions is identified which will be used during the inspection. In addition, a time period for corrective action will be identified, if applicable (see Table.13). Please note, the information provided in Table 6.13 is fictitious and is being used to illustrate how the report will generally appear.

In addition, this effort will also provide a method the documentation needed to evaluate the effectiveness of the BMPs.

TABLE 6.11: LIST OF BMP TYPES.

	(Primary Level)	(Sub Level)
BMP Type	Gate	Facility Hills Access RMA
	Fence	Cultural Drift Facility Habitat RMA
	Erosion Control	Straw Seed Hydro-Mulch
	Sign	Carsonite Interpretive Trail Name
	Basin	
	Check Dam	
	Culvert	
	Rolling Dip	

TABLE 6.12: LIST OF POTENTIAL ACTIONS.

Recommended Action	BMP Needed
	Good-No Action Needed
	Maintenance Needed
	Remove
	Replace
	Review

TABLE 6.13: EXAMPLE OF BMP STATUS INSPECTION SUMMARY TABLE.

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
1	Basin	April 2012	Good-No Action Needed	Yes	n/a
2	Basin	April 2012	Good-No Action Needed	Yes	n/a
3	Basin	April 2012	Good-No Action Needed	Yes	n/a
4	Check Dam	April 2012	Remove	No	n/a
5	Check Dam	April 2012	No Longer Needed	No	n/a
6	Check Dam	April 2012	Good-No Action Needed	No	n/a
7	Check Dam	April 2012	Good-No Action Needed	No	n/a
8	Check Dam	April 2012	Good-No Action Needed	No	n/a
9	Check Dam	April 2012	Good-No Action Needed	No	n/a
10	Check Dam	April 2012	Good-No Action Needed	No	n/a
11	Check Dam	April 2012	Good-No Action Needed	No	n/a
12	Check Dam	April 2012	Good-No Action Needed	No	n/a
13	Check Dam	April 2012	Good-No Action Needed	No	n/a
14	Check Dam	April 2012	Good-No Action Needed	No	n/a
15	Check Dam	April 2012	Maintenance Needed	No	30 days
16	Check Dam	April 2012	Maintenance Needed	Yes	30 days
17	Check Dam	April 2012	Good-No Action Needed	No	n/a
18	Check Dam	April 2012	Good-No Action Needed	No	n/a
19	Check Dam	April 2012	Maintenance Needed	No	30 days
20	Check Dam	April 2012	Maintenance Needed	No	30 days
21	Check Dam	April 2012	Maintenance Needed	No	30 days
22	Check Dam	April 2012	Maintenance Needed	No	30 days
23	Check Dam	April 2012	Maintenance Needed	No	30 days
24	Check Dam	April 2012	Maintenance Needed	No	30 days
25	Check Dam	April 2012	Good-No Action Needed	No	n/a
26	Check Dam	April 2012	Good-No Action Needed	No	n/a
26	Check Dam	April 2012	Good-No Action Needed	No	n/a
27	Check Dam	April 2012	Replace	No	n/a
28	Check Dam	April 2012	Good-No Action Needed	No	n/a
29	Check Dam	April 2012	Good-No Action Needed	No	n/a
30	Check Dam	April 2012	Good-No Action Needed	No	n/a
31	Check Dam	April 2012	Good-No Action Needed	No	n/a
32	Check Dam	April 2012	Replace	No	n/a
33	Check Dam	April 2012	Good-No Action Needed	No	n/a
34	Check Dam	April 2012	Good-No Action Needed	No	n/a
35	Check Dam	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
36	Check Dam	April 2012	Good-No Action Needed	No	n/a
37	Culvert	April 2012	Good-No Action Needed	No	n/a
38	Culvert	April 2012	Good-No Action Needed	No	n/a
39	Culvert	April 2012	Good-No Action Needed	No	n/a
40	Culvert	April 2012	Good-No Action Needed	No	n/a
41	Culvert	April 2012	Good-No Action Needed	No	n/a
42	Culvert	April 2012	Good-No Action Needed	No	n/a
44	Other Gate	April 2012	Good-No Action Needed	No	n/a
45	Other Gate	April 2012	Good-No Action Needed	No	n/a
46	RMA Gate	April 2012	Good-No Action Needed	No	n/a
47	RMA Gate	April 2012	Good-No Action Needed	No	n/a
48	RMA Gate	April 2012	Good-No Action Needed	No	n/a
49	RMA Gate	April 2012	Good-No Action Needed	No	n/a
50	RMA Gate	April 2012	Good-No Action Needed	No	n/a
51	RMA Gate	April 2012	Good-No Action Needed	No	n/a
52	RMA Gate	April 2012	Good-No Action Needed	No	n/a
53	RMA Gate	April 2012	Good-No Action Needed	No	n/a
54	RMA Gate	April 2012	Good-No Action Needed	No	n/a
55	RMA Gate	April 2012	Good-No Action Needed	No	n/a
56	RMA Gate	April 2012	Good-No Action Needed	No	n/a
57	RMA Gate	April 2012	Good-No Action Needed	No	n/a
58	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
59	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
60	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
61	Rolling Dip	April 2012	Maintenance Needed	No	30 days
62	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
63	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
64	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
65	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
66	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
67	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
68	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
69	Carsonite Line	April 2012	Good-No Action Needed	No	n/a
71	Drift Fence	April 2012	Good-No Action Needed	No	n/a
72	Drift Fence	April 2012	Good-No Action Needed	No	n/a
73	Drift Fence	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
74	Drift Fence	April 2012	Good-No Action Needed	No	n/a
75	Drift Fence	April 2012	Good-No Action Needed	No	n/a
76	Drift Fence	April 2012	Good-No Action Needed	No	n/a
77	Drift Fence	April 2012	Good-No Action Needed	No	n/a
78	Drift Fence	April 2012	Good-No Action Needed	No	n/a
79	Drift Fence	April 2012	Good-No Action Needed	No	n/a
80	Drift Fence	April 2012	Good-No Action Needed	No	n/a
81	Drift Fence	April 2012	Good-No Action Needed	No	n/a
82	Drift Fence	April 2012	Good-No Action Needed	No	n/a
83	Drift Fence	April 2012	Good-No Action Needed	No	n/a
84	Drift Fence	April 2012	Good-No Action Needed	No	n/a
85	Drift Fence	April 2012	Good-No Action Needed	No	n/a
86	Drift Fence	April 2012	Good-No Action Needed	No	n/a
87	Drift Fence	April 2012	Good-No Action Needed	No	n/a
88	Drift Fence	April 2012	Good-No Action Needed	No	n/a
89	Drift Fence	April 2012	Good-No Action Needed	No	n/a
90	Drift Fence	April 2012	Good-No Action Needed	No	n/a
91	Drift Fence	April 2012	Good-No Action Needed	No	n/a
92	Drift Fence	April 2012	Good-No Action Needed	No	n/a
93	Drift Fence	April 2012	Good-No Action Needed	No	n/a
94	Drift Fence	April 2012	Good-No Action Needed	No	n/a
95	Drift Fence	April 2012	Good-No Action Needed	No	n/a
96	Drift Fence	April 2012	Good-No Action Needed	No	n/a
97	Drift Fence	April 2012	Good-No Action Needed	No	n/a
98	Drift Fence	April 2012	Good-No Action Needed	No	n/a
99	Drift Fence	April 2012	Good-No Action Needed	No	n/a
100	Drift Fence	April 2012	Good-No Action Needed	No	n/a
101	Drift Fence	April 2012	Good-No Action Needed	No	n/a
102	Drift Fence	April 2012	Good-No Action Needed	No	n/a
103	Drift Fence	April 2012	Good-No Action Needed	No	n/a
104	Drift Fence	April 2012	Good-No Action Needed	No	n/a
105	Drift Fence	April 2012	Good-No Action Needed	No	n/a
106	Other Fence	April 2012	Good-No Action Needed	No	n/a
107	Other Fence	April 2012	Good-No Action Needed	No	n/a
109	Habitat Fence	April 2012	Good-No Action Needed	No	n/a
110	Habitat Fence	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
111	Habitat Fence	April 2012	Good-No Action Needed	No	n/a
112	Habitat Fence	April 2012	Good-No Action Needed	No	n/a
113	Other Fence	April 2012	Good-No Action Needed	No	n/a
114	Other Fence	April 2012	Good-No Action Needed	No	n/a
115	Other Fence	April 2012	Good-No Action Needed	No	n/a
116	Other Fence	April 2012	Good-No Action Needed	No	n/a
117	Other Fence	April 2012	Good-No Action Needed	No	n/a
118	Other Fence	April 2012	Good-No Action Needed	No	n/a
119	Other Fence	April 2012	Good-No Action Needed	No	n/a
120	Other Fence	April 2012	Good-No Action Needed	No	n/a
121	Other Fence	April 2012	Good-No Action Needed	No	n/a
122	Other Fence	April 2012	Good-No Action Needed	No	n/a
123	Other Fence	April 2012	Good-No Action Needed	No	n/a
124	Other Fence	April 2012	Good-No Action Needed	No	n/a
125	Other Fence	April 2012	Good-No Action Needed	No	n/a
126	Other Fence	April 2012	Good-No Action Needed	No	n/a
127	Other Fence	April 2012	Good-No Action Needed	No	n/a
128	Other Fence	April 2012	Good-No Action Needed	No	n/a
129	Other Fence	April 2012	Good-No Action Needed	No	n/a
130	Other Fence	April 2012	Good-No Action Needed	No	n/a
131	Other Fence	April 2012	Good-No Action Needed	No	n/a
132	Other Fence	April 2012	Good-No Action Needed	No	n/a
133	RMA Fence	April 2012	Good-No Action Needed	No	n/a
134	RMA Fence	April 2012	Good-No Action Needed	No	n/a
135	RMA Fence	April 2012	Good-No Action Needed	No	n/a
136	RMA Fence	April 2012	Good-No Action Needed	No	n/a
137	RMA Fence	April 2012	Good-No Action Needed	No	n/a
138	RMA Fence	April 2012	Good-No Action Needed	No	n/a
139	RMA Fence	April 2012	Good-No Action Needed	No	n/a
140	RMA Fence	April 2012	Good-No Action Needed	No	n/a
141	RMA Fence	April 2012	Good-No Action Needed	No	n/a
142	RMA Fence	April 2012	Good-No Action Needed	No	n/a
143	RMA Fence	April 2012	Good-No Action Needed	No	n/a
144	RMA Fence	April 2012	Good-No Action Needed	No	n/a
145	RMA Fence	April 2012	Good-No Action Needed	No	n/a
146	RMA Fence	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
147	RMA Fence	April 2012	Good-No Action Needed	No	n/a
148	RMA Fence	April 2012	Good-No Action Needed	No	n/a
149	RMA Fence	April 2012	Good-No Action Needed	No	n/a
150	RMA Fence	April 2012	Good-No Action Needed	No	n/a
151	RMA Fence	April 2012	Good-No Action Needed	No	n/a
152	RMA Fence	April 2012	Good-No Action Needed	No	n/a
153	RMA Fence	April 2012	Good-No Action Needed	No	n/a
154	RMA Fence	April 2012	Good-No Action Needed	No	n/a
155	RMA Fence	April 2012	Good-No Action Needed	No	n/a
156	RMA Fence	April 2012	Good-No Action Needed	No	n/a
157	RMA Fence	April 2012	Good-No Action Needed	No	n/a
158	RMA Fence	April 2012	Good-No Action Needed	No	n/a
159	RMA Fence	April 2012	Good-No Action Needed	No	n/a
160	RMA Fence	April 2012	Good-No Action Needed	No	n/a
161	RMA Fence	April 2012	Good-No Action Needed	No	n/a
162	RMA Fence	April 2012	Good-No Action Needed	No	n/a
163	RMA Fence	April 2012	Good-No Action Needed	No	n/a
164	RMA Fence	April 2012	Good-No Action Needed	No	n/a
165	RMA Fence	April 2012	Good-No Action Needed	Yes	n/a
166	RMA Fence	April 2012	Good-No Action Needed	No	n/a
167	RMA Fence	April 2012	Good-No Action Needed	No	n/a
168	RMA Fence	April 2012	Good-No Action Needed	No	n/a
169	RMA Fence	April 2012	Good-No Action Needed	No	n/a
170	RMA Fence	April 2012	Good-No Action Needed	No	n/a
171	RMA Fence	April 2012	Good-No Action Needed	No	n/a
172	RMA Fence	April 2012	Good-No Action Needed	No	n/a
173	RMA Fence	April 2012	Good-No Action Needed	No	n/a
174	RMA Fence	April 2012	Good-No Action Needed	No	n/a
175	RMA Fence	April 2012	Good-No Action Needed	No	n/a
176	RMA Fence	April 2012	Good-No Action Needed	No	n/a
177	RMA Fence	April 2012	Good-No Action Needed	No	n/a
178	RMA Fence	April 2012	Good-No Action Needed	No	n/a
179	RMA Fence	April 2012	Good-No Action Needed	No	n/a
180	RMA Fence	April 2012	Good-No Action Needed	No	n/a
181	RMA Fence	April 2012	Good-No Action Needed	No	n/a
182	RMA Fence	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
183	RMA Fence	April 2012	Good-No Action Needed	No	n/a
184	RMA Fence	April 2012	Good-No Action Needed	No	n/a
185	RMA Fence	April 2012	Good-No Action Needed	No	n/a
186	RMA Fence	April 2012	Good-No Action Needed	No	n/a
187	RMA Fence	April 2012	Good-No Action Needed	No	n/a
188	RMA Fence	April 2012	Good-No Action Needed	No	n/a
189	Drift Fence	April 2012	Good-No Action Needed	No	n/a
190	Drift Fence	April 2012	Good-No Action Needed	No	n/a
191	Drift Fence	April 2012	Good-No Action Needed	No	n/a
192	Drift Fence	April 2012	Good-No Action Needed	No	n/a
193	Drift Fence	April 2012	Good-No Action Needed	No	n/a
194	Drift Fence	April 2012	Good-No Action Needed	No	n/a
195	Drift Fence	April 2012	Good-No Action Needed	No	n/a
196	Facility Gate	April 2012	Good-No Action Needed	No	n/a
197	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
198	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
199	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
199	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
200	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
201	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
202	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
203	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
204	Hills Access Gate	April 2012	Good-No Action Needed	No	n/a
205	Culvert	April 2012	Good-No Action Needed	No	n/a
206	Culvert	April 2012	Good-No Action Needed	No	n/a
207	Culvert	April 2012	Good-No Action Needed	No	n/a
208	Culvert	April 2012	Good-No Action Needed	No	n/a
209	Culvert	April 2012	Good-No Action Needed	No	n/a
210	Culvert	April 2012	Good-No Action Needed	No	n/a
211	Culvert	April 2012	Good-No Action Needed	No	n/a
212	Drift Fence	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
213	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
214	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
215	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
216	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
217	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
218	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
219	Check Dam	April 2012	Good-No Action Needed	Yes	n/a
220	Rolling Dip	April 2012	Maintenance Needed	No	30 days
221	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
222	Rolling Dip	April 2012	Maintenance Needed	No	30 days
223	Rolling Dip	April 2012	Maintenance Needed	No	30 days
224	Rolling Dip	April 2012	Maintenance Needed	No	30 days
225	Rolling Dip	April 2012	Maintenance Needed	No	30 days
226	Rolling Dip	April 2012	Maintenance Needed	No	30 days
227	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
228	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
229	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
230	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
231	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
232	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
233	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
234	Rolling Dip	April 2012	Maintenance Needed	No	30 days
235	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
236	Rolling Dip	April 2012	Maintenance Needed	No	30 days
237	Rolling Dip	April 2012	Maintenance Needed	No	30 days
238	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
239	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
240	Rolling Dip	April 2012	Maintenance Needed	No	30 days
241	Rolling Dip	April 2012	Maintenance Needed	No	30 days
242	Rolling Dip	April 2012	Maintenance Needed	No	30 days
243	Rolling Dip	April 2012	Maintenance Needed	No	30 days
244	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
245	Rolling Dip	April 2012	Maintenance Needed	No	30 days
246	Rolling Dip	April 2012	Maintenance Needed	No	30 days
250	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
251	Rolling Dip	April 2012	Maintenance Needed	No	30 days

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
252	Rolling Dip	April 2012	Maintenance Needed	No	30 days
253	Rolling Dip	April 2012	Maintenance Needed	No	30 days
254	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
255	Rolling Dip	April 2012	Maintenance Needed	No	30 days
256	Rolling Dip	April 2012	Maintenance Needed	No	30 days
257	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
258	Rolling Dip	April 2012	Maintenance Needed	No	30 days
259	Rolling Dip	April 2012	Maintenance Needed	No	30 days
260	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
261	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
262	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
263	Rolling Dip	April 2012	Maintenance Needed	No	30 days
264	Rolling Dip	April 2012	Maintenance Needed	No	30 days
265	Rolling Dip	April 2012	Maintenance Needed	No	30 days
266	Rolling Dip	April 2012	Maintenance Needed	No	30 days
267	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
268	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
269	Rolling Dip	April 2012	Maintenance Needed	No	30 days
270	Rolling Dip	April 2012	Maintenance Needed	No	30 days
271	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
272	Rolling Dip	April 2012	Maintenance Needed	No	30 days
273	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
274	Rolling Dip	April 2012	Maintenance Needed	No	30 days
275	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
276	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
278	Rolling Dip	April 2012	Maintenance Needed	No	30 days
279	Rolling Dip	April 2012	Maintenance Needed	No	30 days
280	Rolling Dip	April 2012	Maintenance Needed	No	30 days
281	Rolling Dip	April 2012	Maintenance Needed	No	30 days
282	Rolling Dip	April 2012	Maintenance Needed	No	30 days
283	Rolling Dip	April 2012	Maintenance Needed	No	30 days
284	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
285	Rolling Dip	April 2012	Maintenance Needed	No	30 days
286	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
287	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
288	Rolling Dip	April 2012	Maintenance Needed	No	30 days

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
289	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
290	Rolling Dip	April 2012	Maintenance Needed	No	30 days
291	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
292	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
293	Rolling Dip	April 2012	Maintenance Needed	No	30 days
294	Rolling Dip	April 2012	Maintenance Needed	No	30 days
295	Rolling Dip	April 2012	Maintenance Needed	No	30 days
296	Rolling Dip	April 2012	Maintenance Needed	No	30 days
297	Rolling Dip	April 2012	Maintenance Needed	No	30 days
298	Rolling Dip	April 2012	Maintenance Needed	No	30 days
299	Rolling Dip	April 2012	Maintenance Needed	No	30 days
300	Rolling Dip	April 2012	Maintenance Needed	No	30 days
301	Rolling Dip	April 2012	Maintenance Needed	No	30 days
302	Rolling Dip	April 2012	Maintenance Needed	No	30 days
303	Rolling Dip	April 2012	Maintenance Needed	No	30 days
304	Rolling Dip	April 2012	Maintenance Needed	No	30 days
305	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
306	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
307	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
308	Rolling Dip	April 2012	Maintenance Needed	No	30 days
309	Rolling Dip	April 2012	Maintenance Needed	No	30 days
310	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
311	Rolling Dip	April 2012	Maintenance Needed	No	30 days
312	Rolling Dip	April 2012	Maintenance Needed	No	30 days
313	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
314	Rolling Dip	April 2012	Maintenance Needed	No	30 days
315	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
316	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
317	Rolling Dip	April 2012	Maintenance Needed	No	30 days
318	Rolling Dip	April 2012	Maintenance Needed	No	30 days
319	Rolling Dip	April 2012	Maintenance Needed	No	30 days
320	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
321	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
322	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
323	Rolling Dip	April 2012	Maintenance Needed	No	30 days
324	Rolling Dip	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
325	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
326	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
327	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
328	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
329	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
330	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
331	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
332	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
333	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
334	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
335	Rolling Dip	April 2012	Maintenance Needed	No	30 days
336	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
337	Rolling Dip	April 2012	Maintenance Needed	No	30 days
338	Rolling Dip	April 2012	Maintenance Needed	No	30 days
339	Rolling Dip	April 2012	Maintenance Needed	No	30 days
340	Rolling Dip	April 2012	Maintenance Needed	No	30 days
341	Rolling Dip	April 2012	Maintenance Needed	No	30 days
342	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
343	Rolling Dip	April 2012	Maintenance Needed	No	30 days
344	Rolling Dip	April 2012	Maintenance Needed	No	30 days
345	Rolling Dip	April 2012	Maintenance Needed	No	30 days
346	Rolling Dip	April 2012	Maintenance Needed	No	30 days
347	Rolling Dip	April 2012	Maintenance Needed	No	30 days
348	Rolling Dip	April 2012	Maintenance Needed	No	30 days
349	Culvert	April 2012	Good-No Action Needed	No	n/a
350	Rolling Dip	April 2012	Maintenance Needed	No	n/a
351	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
352	Rolling Dip	April 2012	Maintenance Needed	No	30 days
353	Rolling Dip	April 2012	Maintenance Needed	No	30 days
354	Rolling Dip	April 2012	Maintenance Needed	No	30 days
355	Rolling Dip	April 2012	Maintenance Needed	No	30 days
356	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
357	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
358	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
359	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
360	Rolling Dip	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
361	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
362	Rolling Dip	April 2012	Maintenance Needed	No	30 days
363	Rolling Dip	April 2012	Maintenance Needed	No	30 days
364	Rolling Dip	April 2012	Maintenance Needed	No	30 days
365	Rolling Dip	April 2012	Maintenance Needed	No	30 days
366	Rolling Dip	April 2012	Maintenance Needed	No	30 days
367	Rolling Dip	April 2012	Maintenance Needed	No	30 days
368	Rolling Dip	April 2012	Maintenance Needed	No	30 days
369	Rolling Dip	April 2012	Maintenance Needed	No	30 days
370	Rolling Dip	April 2012	Maintenance Needed	No	30 days
371	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
372	Rolling Dip	April 2012	Maintenance Needed	No	30 days
373	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
374	Rolling Dip	April 2012	Maintenance Needed	No	30 days
375	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
376	Rolling Dip	April 2012	Maintenance Needed	No	30 days
377	Rolling Dip	April 2012	Maintenance Needed	No	30 days
378	Rolling Dip	April 2012	Maintenance Needed	No	30 days
379	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
380	Rolling Dip	April 2012	Maintenance Needed	No	30 days
381	Rolling Dip	April 2012	Maintenance Needed	No	30 days
382	Rolling Dip	April 2012	Maintenance Needed	No	30 days
383	Rolling Dip	April 2012	Maintenance Needed	No	30 days
384	Rolling Dip	April 2012	Maintenance Needed	No	30 days
385	Rolling Dip	April 2012	Maintenance Needed	No	30 days
386	Rolling Dip	April 2012	Maintenance Needed	No	30 days
387	Rolling Dip	April 2012	Maintenance Needed	No	30 days
388	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
389	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
390	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
391	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
392	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
393	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
394	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
395	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
396	Rolling Dip	April 2012	Good-No Action Needed	No	n/a

BMP_ID	BMP Type	Inspection Period	Recommended Action	Photo Taken	Corrective Period
397	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
398	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
399	Rolling Dip	April 2012	Maintenance Needed	No	30 days
400	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
401	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
402	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
403	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
404	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
405	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
406	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
407	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
408	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
409	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
410	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
411	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
412	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
413	Rolling Dip	April 2012	Maintenance Needed	No	30 days
414	Rolling Dip	April 2012	Maintenance Needed	No	30 days
415	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
416	Rolling Dip	April 2012	Maintenance Needed	No	30 days
417	Rolling Dip	April 2012	Maintenance Needed	No	30 days
418	Rolling Dip	April 2012	Good-No Action Needed	No	n/a
419	Rolling Dip	April 2012	Maintenance Needed	No	30 days

Photo Documentation

BMP 1-Basin

BMP 2-Basin

BMP 3-Basin

BMP 16-Check Dam

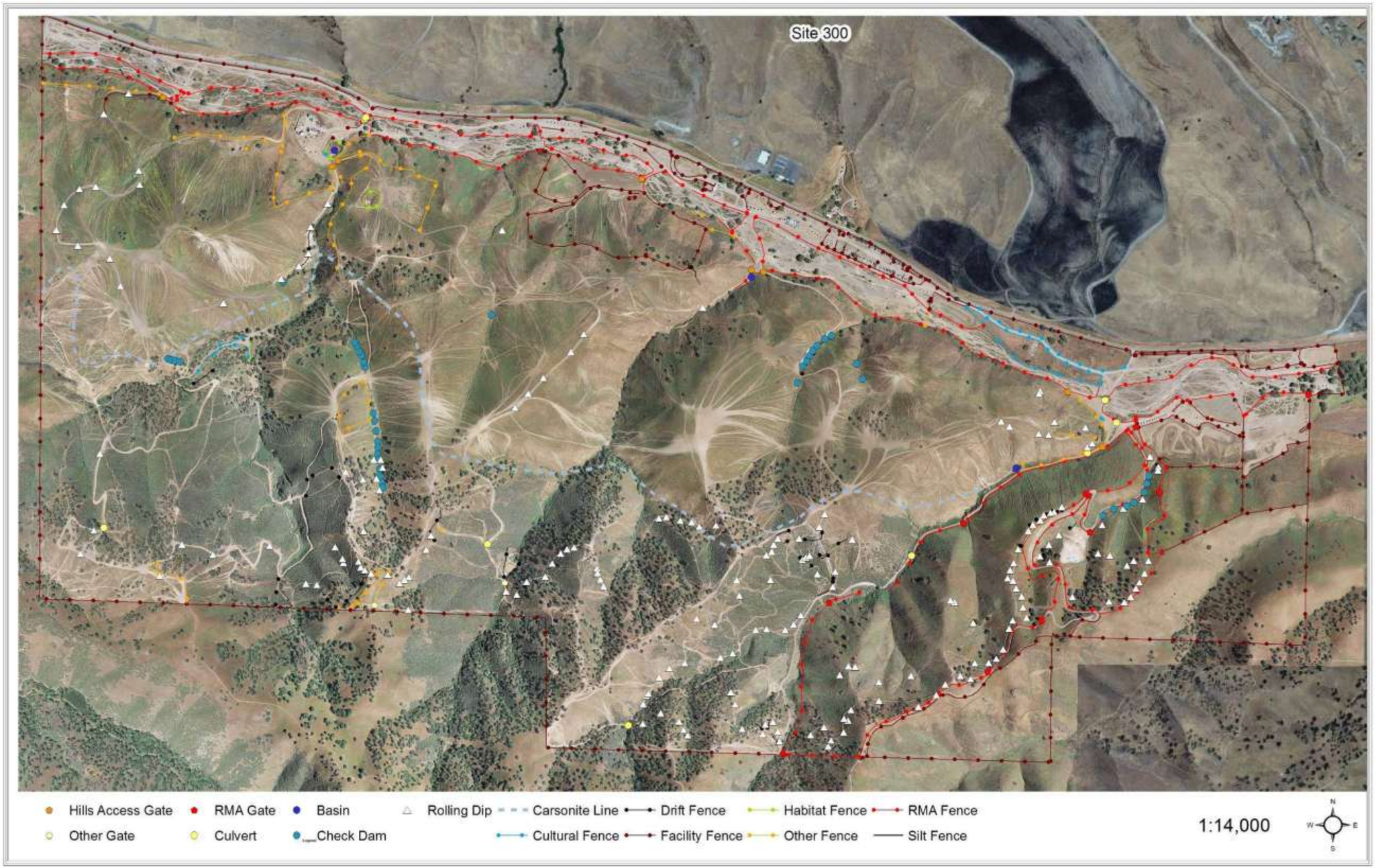
BMP 20-Check Dam

BMP 23-Check Dam

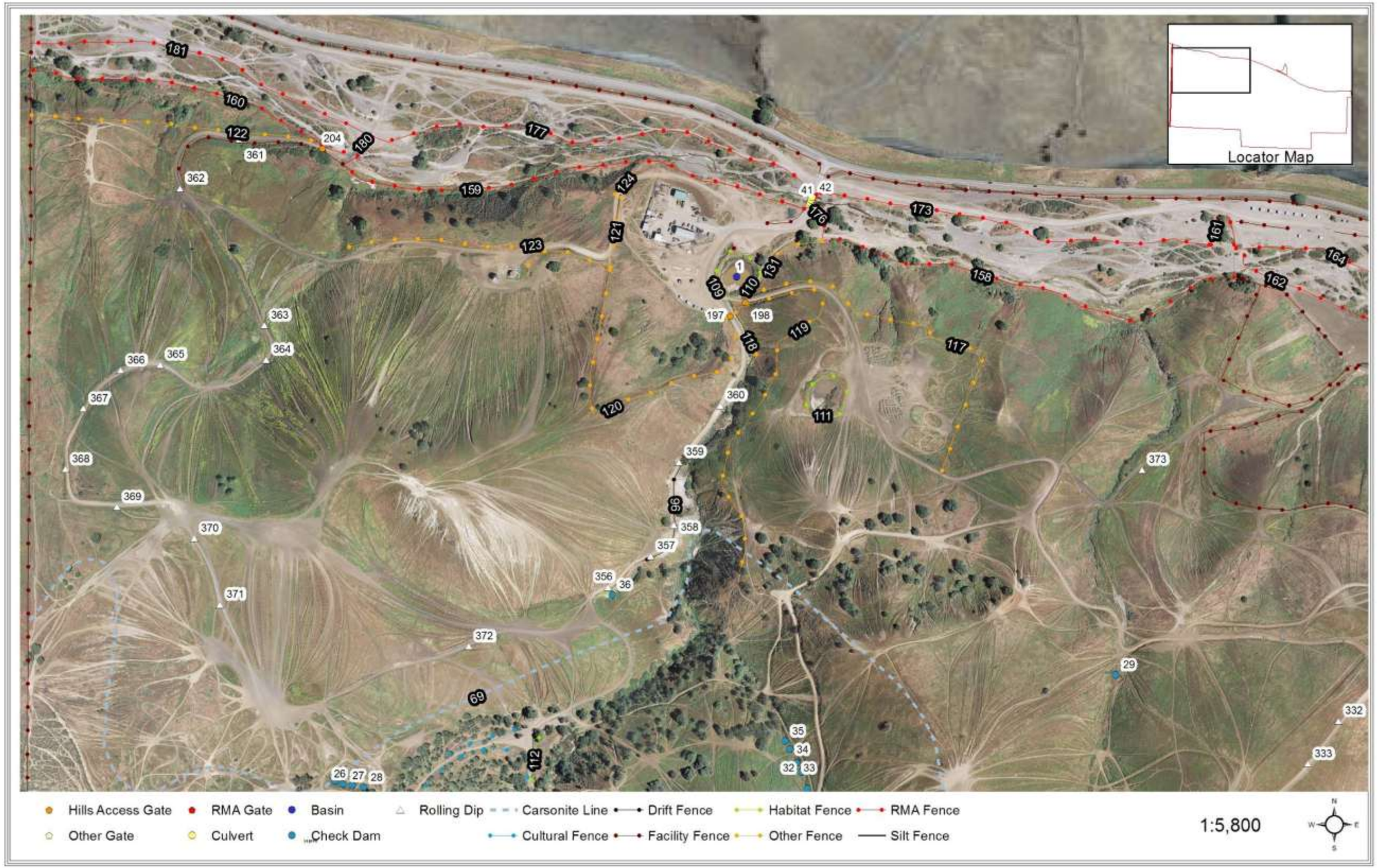
BMP 67-Rolling Dip

BMP 165-RMA Fence

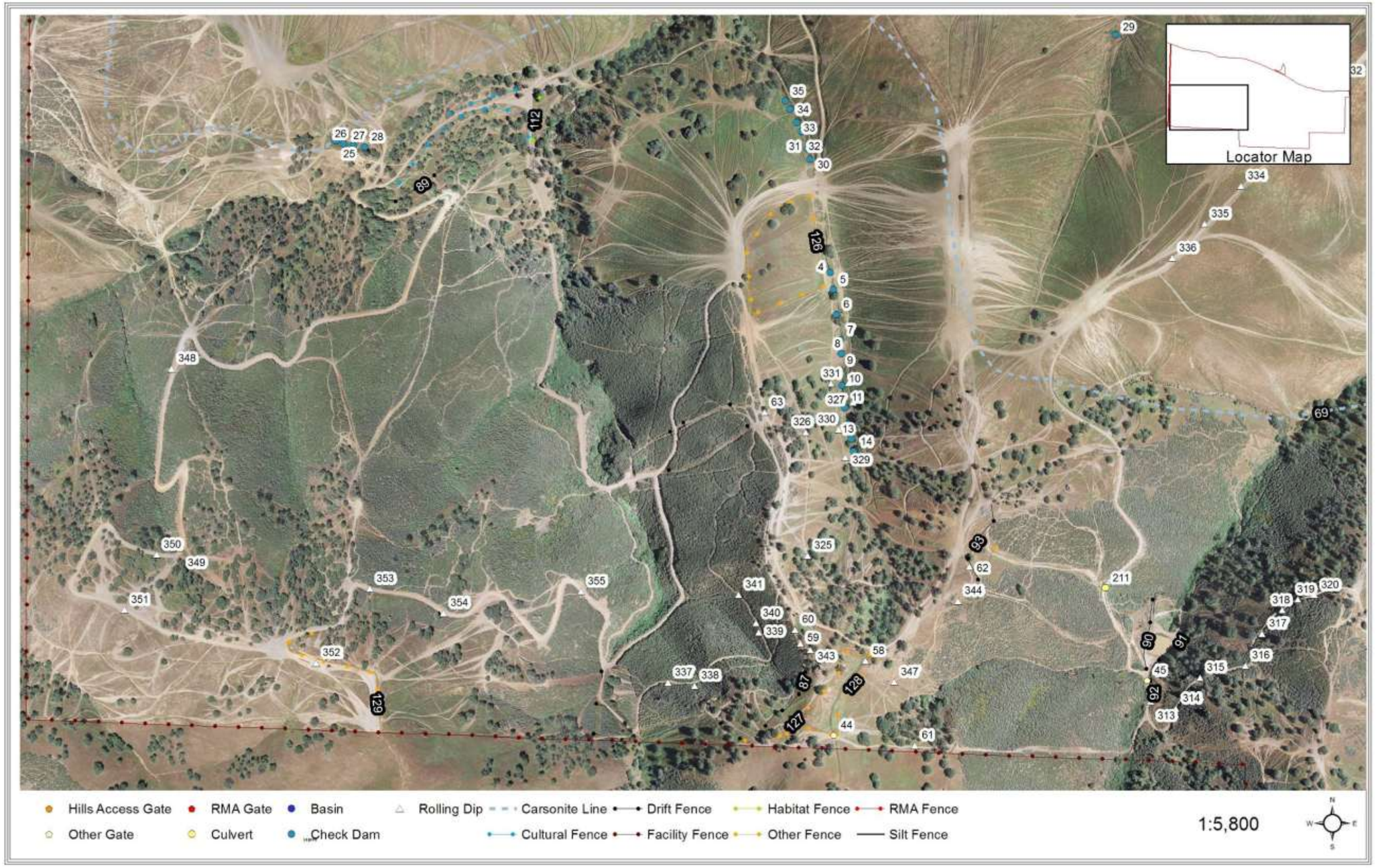
BMP 202-Hills Access Gate



Map 4: BMP Locations.

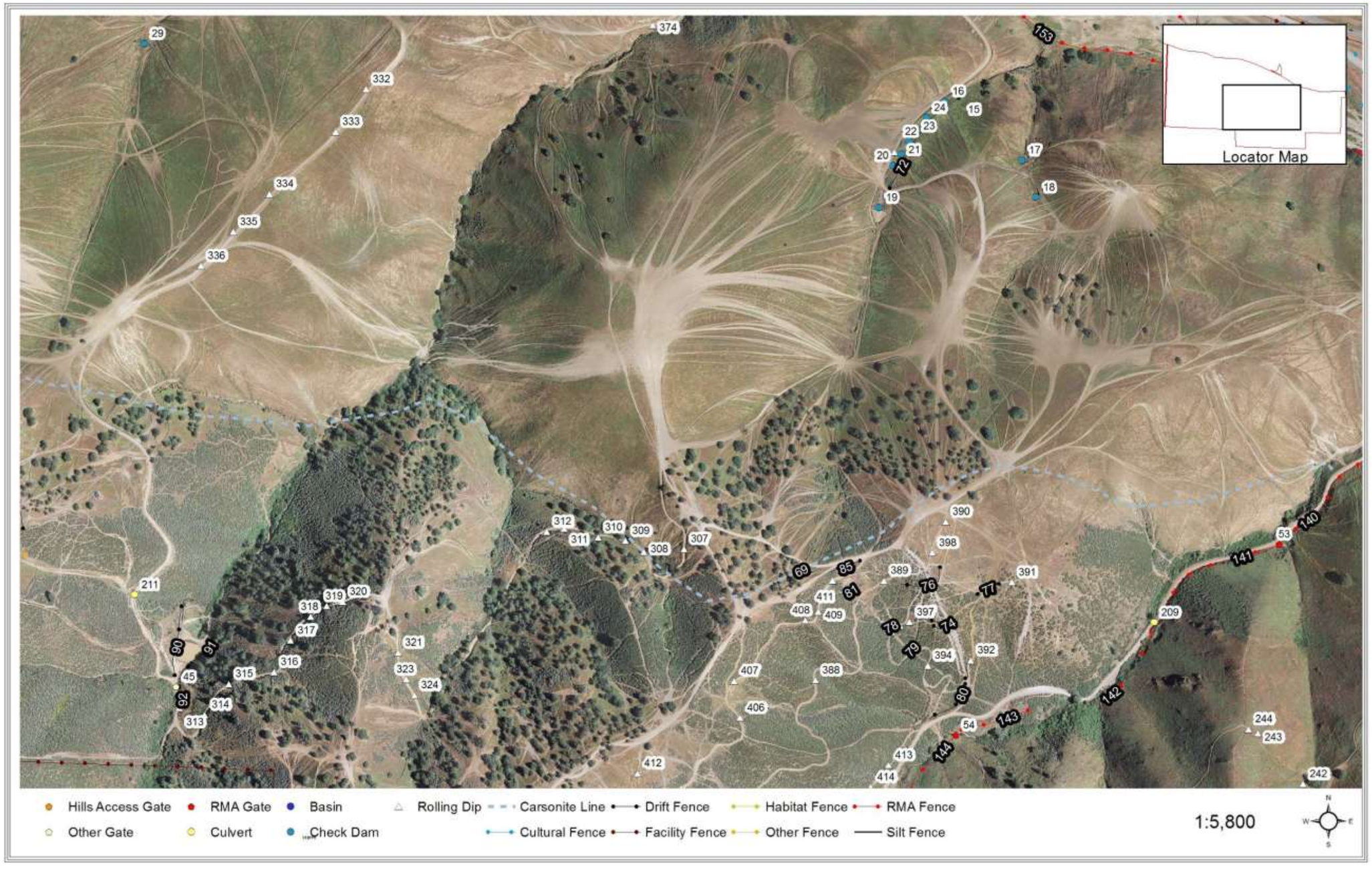


Map 5: BMP View 1.

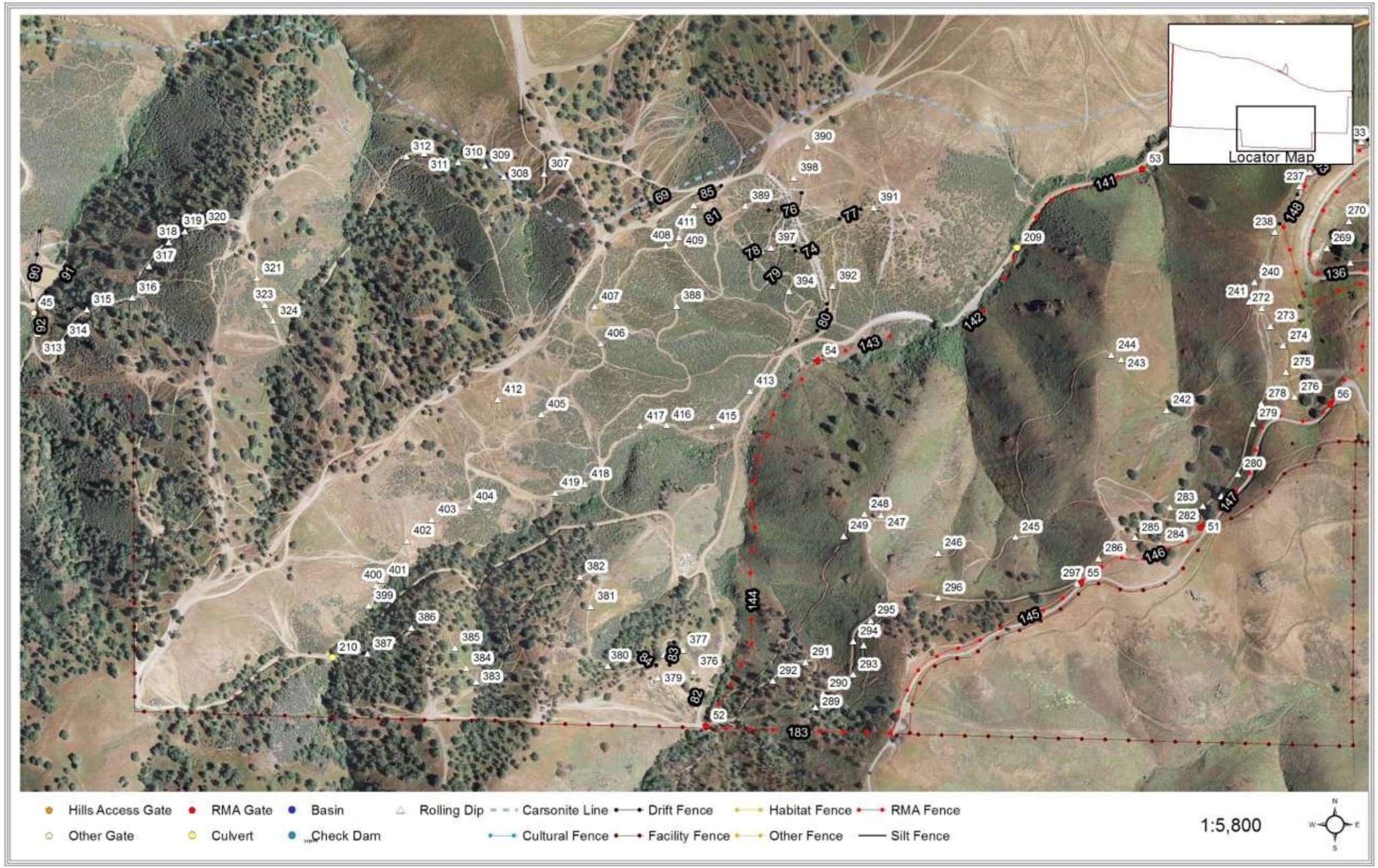


Map 6: BMP View 2.

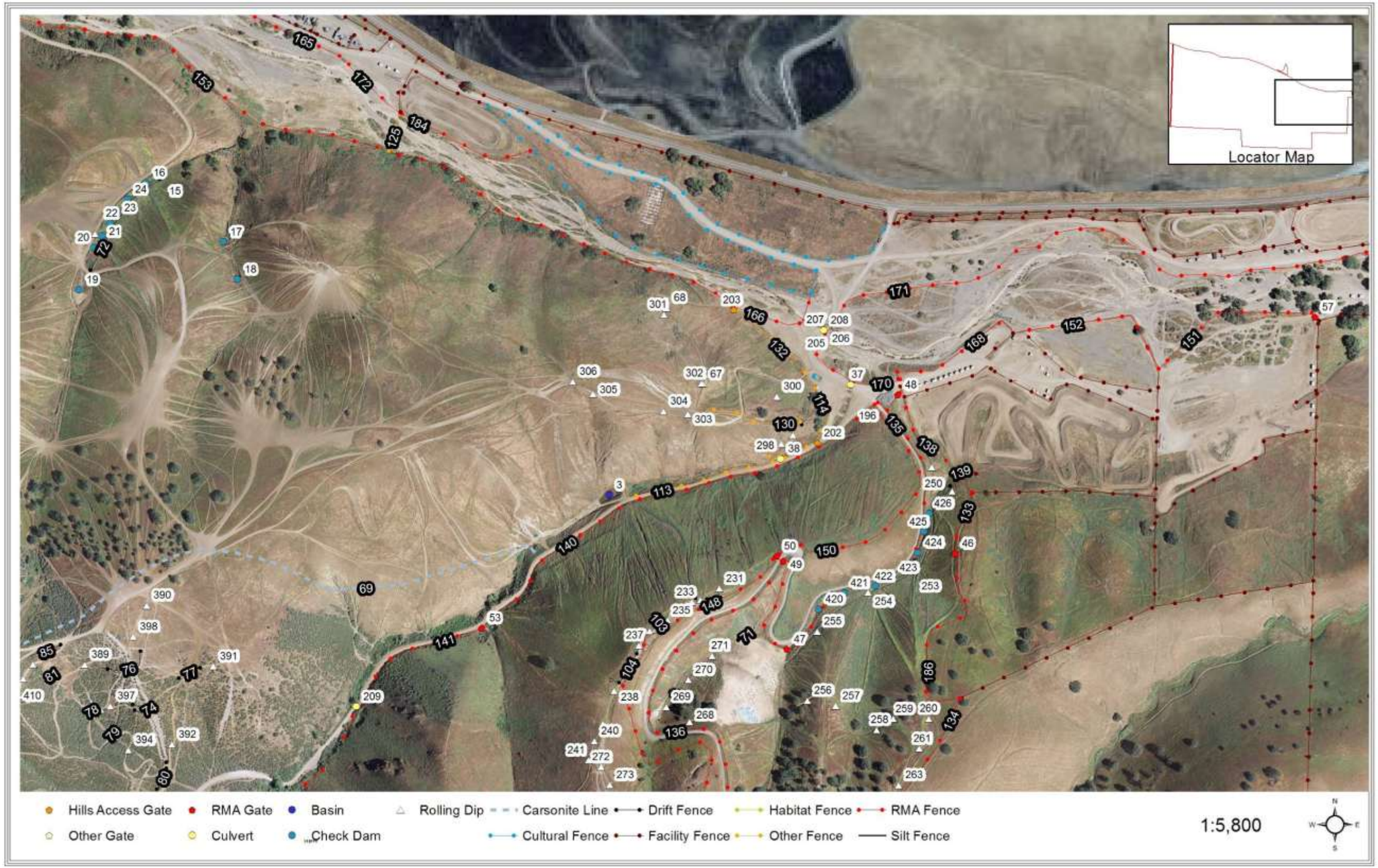
Map 7: BMP-View 3.



Map 8: BMP-View 4.



Map 9: BMP-View 5.



Map 10: BMP-View 6.

Map 11: BMP-View 7.

9 RECORD KEEPING AND REPORTING

The following sections provide a summary of the record keeping and reporting requirements of the General Permit.

Annual Reports

The General Permit requires Permittees to submit an Annual Report describing the status and effectiveness of the SWMP. The annual report will be submitted to the RWQCB by September 15th of each year. The report shall summarize the activities performed throughout the previous reporting period (July 1st through June 30th). At a minimum, the report must include the following:

- The status of compliance with the conditions of the General Permit
- The status of the measurable goals
- An assessment of the effectiveness of the BMPs that have been implemented
- Any results, monitoring data, or information collected during the reporting period
- A summary of the storm water activities proposed for the next reporting cycle
- Any proposed changes to the SWMP along with justification of why the changes are necessary

The SWRCB has developed an Annual Report form to assist Permittees in completing their Annual Reports. The form requires the Permittees to enter general information about their facilities as well as specific information regarding implementation and effectiveness of the measurable goals. A copy of the Annual Report form has been provided in Appendix B. However, Permittees are not required to use the form and may submit the Annual Report in a different format, provided it meets the requirements of the General Permit.

Updates and Modifications

During the course of the reporting cycle, the Permittee may determine that any of the proposed BMPs or measurable goals is ineffective in meeting the minimum requirements of the General Permit. Similarly, the BMPs and measurable goals that seemed appropriate in the development phase of the SWMP may be deemed infeasible during the implementation phase due to cost, space constraints, or other unforeseen circumstances. Consequently, the proposed BMPs and measurable goals may require modification or replacement in order to meet the minimum requirements. If such modifications are made, the SWMP document shall be updated as soon as practicable. Any modifications or replacements must also be described in a report to the RWQCB.

Record Keeping and Public Access

All documents required by the General Permit must be retained by the Permittee for at least five years or for the duration of the General Permit (if reissued). However, the Executive Officer of the RWQCB may require the Permittee to retain the documents for a longer period of time. The documents will be made available to the Executive Officer upon request. The General Permit also requires that the required documents are made available to the public during regular business hours.

10 REFERENCES

Bowen, B. M., 2006. Lawrence Livermore National Laboratory's Livermore Site and Site 300 Precipitation Climatology 1958-2006 *(In review)*. Terrestrial and Atmospheric Monitoring and Modeling Group, Environmental Protection Department, Lawrence Livermore National Laboratory.

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LLNL, 2005. "Environmental Report– 2004." September, 2005.

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APPENDIX A

NPDES GENERAL PERMIT FOR SMALL MS4S

APPENDIX B

NPDES ANNUAL REPORT FORMS FOR SMALL MS4S